Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Chad	Abel	Burns Paiute Tribe	chad.abel@burnspaiute-nsn.gov

Presenting Paper *Student: False*

Co-Authors

D.J.	Brown	Burns Paiute Tribe
Jason	Kesling	5415731375

Title

Upper Malheur Brook Trout Suppression Plan

Abstract

Malheur River headwater streams support spawning populations of the federally threatened bull trout Salvelinus confluentus. Non-native brook trout Salvelinus fontinalis were introduced into the Upper Malheur Fork of the basin in the 1930's and pose serious threats to resident bull trout because of their ability to outcompete and hybridize with the native. Currently bull trout in the Upper Malheur are considered to be at a "high risk" of extinction.

Through cooperative inter-agency efforts, Burns Paiute Tribe is proposing to take the lead in implementing brook trout suppression activities throughout essential bull trout habitat in the Upper Malheur. Mechanical removal in a 5.8 acre headwater lake, seasonal fish weir operations to protect spawning habitat and prevent upstream brook trout movements, and a large-scale chemical treatment effort in streams lacking bull trout occupancy are the main objectives being proposed to suppress brook trout populations. Contingency planning is essential as the project moves forward so suppression efforts can be adaptive and based on the most current information available. A key land acquisition to benefit migratory bull trout in Logan Valley's Lake Creek is also being proposed as part of the overarching recovery strategy for the Upper Malheur local population. Feedback from the audience on proposed strategies is encouraged.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Christopher	Adams	CADFG, AFRAMP	cadams@dfg.ca.gov

Presenting Paper *Student: False*

Co-Authors

William	Chesney	CADFG, AFRAMP

Title

Shasta River Juvenile Coho Monitoring Using PIT Tags and Remote Detection

Abstract

Passive integrated transponder (PIT) tags were used to gain information regarding the rearing, migration, growth, and survival of juvenile coho salmon (brood year 2007) in the Shasta River in 2008 and 2009. Newly developed and relatively inexpensive remote PIT tag detection systems were installed at key locations to monitor tagged individuals. These efforts revealed migrations to areas of cold spring inflow of the Shasta and its tributaries where coho successfully reared over the summer of 2008. Fall/winter redistribution was documented when tagged individuals were detected at locations throughout the watershed. Survival over three Shasta river reaches was estimated using a Cormack Jolly Seber model in program Mark for tagged coho emigrating from main stem Shasta rearing habitats as smolts in the spring of 2009. Detection probability of several remote detection systems was also estimated using this analytical methodology.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Nicholas	Albrecht	Oregon Department of Fish and Wildlife	nick.albrecht@eou.edu

Presenting Poster Student: False

Co-Authors

Tim	Hoffnagle	Oregon Department of Fish and Wildlife
Joseph	Feldhaus	5419623724

Title

Age Composition of Hatchery-and Natural-Origin Spring Chinook Salmon in Five Northeast Oregon Streams

Abstract

There has been concern that hatchery rearing of Pacific salmon Oncorhynchus sp. may alter age composition of returning adults. Hatchery supplementation has been occurring in Northeast Oregon since the first smolt releases into the Imnaha River in 1994 and in the Upper Grande Ronde River and Catherine Creek since 2000. We examined weir collection data of Chinook salmon O. tshawytscha on three hatchery supplemented streams and compared that to spawning ground survey data from two non-supplemented streams to determine whether hatchery supplementation has caused a shift in the age composition of the returning salmon. The Minam and Wenaha rivers are unsupplemented and we found that age structure of the returning adults did not change over the 1994-2004 brood years. On Upper Grande Ronde River and Catherine Creek, where hatchery supplementation began in 2000, we did not find a shift in the age composition of either hatchery or natural adults from the 1998-2004 brood years. However, on the Imnaha River, where hatchery supplementation has been occurring for 23 full brood years, we found that the percentages of age 4 hatchery and wild fish have increased by 1.36% and 1.12% per brood year, respectively, over the 1982-2004 brood years. We also found that the percentage of age five hatchery females is decreasing by 1.39% each brood year, which is compensating for the increase in age 4 salmon. While the Imnaha River is the only stream that showed significant changes in age composition, it is important to note that hatchery supplementation has been occurring here for a much longer period and that the shift in age composition likely occur slowly. Therefore, it is important to take preventative measures now in order to prevent or reduce the unintentional shift in age composition of returning adults.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Robert	Al-Chokhachy	USDA Forest Service	ralchokhachy@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Jeremiah	Heitke	USDA Forest Service
Eric	Archer	4357553565
Brett	Roper	USDA Forest Service

Title

Evaluating watershed condition: bottom up vs. top down approaches?

Abstract

Habitat degradation has been identified as one of the major factors affecting the declines of fishes in the Columbia River Basin. The condition of physical habitat and the biotic integrity of stream systems are often directly correlated with substantial alterations to key landscape attributes. As such, numerous approaches to measure watershed condition have been developed. Here, we compare two separate measures of watershed condition: 1) a GIS-based measure of condition (i.e., top down); and 2) a ground based assessment of condition (i.e., bottom up) using field data collected across 1,200 sites in the Interior Columbia River Basin under the PIBO Effectiveness Monitoring Project. With our GIS approach, we integrate land management and natural disturbance from watershed upstream of sample reaches into an overall watershed condition score. With our bottom-up approach, we integrate stream temperature data, indices of macroinvertebrate health, and an index of physical habitat condition from reach-level field data into an overall condition score. Our results indicate significant differences in assessments of condition across the two methods, as the GIS approach ranked considerably more watersheds with management activities into a low condition category than found in the bottom-up approach. Conversely, the GIS approach also categorized most watersheds with no or minimal management activities (i.e., reference) as low risk, while the field-based, bottom up approach illustrated a wide range of condition of reference sites due to natural disturbances. Our results suggest GIS-based approaches tended quantify the 'risk' rather than condition within watersheds. The bottom-up approach tended to quantify actual conditions within streams, but do consideration of potential risks associated with land management activities. Here, we advocate the most beneficial approach would be some combination of the two to prioritize restoration activities to enhance habitat conditions and minimize risk of catastrophic disturbances.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Robert	Al-Chokhachy	USDA Forest Service	ralchokhachy@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Brett	Roper	USDA Forest Service
Eric	Archer	4357553565
Scott	Miller	University/BLM

Title

Quantifying temporal variability in stream habitat data: implications for restoration and monitoring

Abstract

Quantifying natural and anthropogenic-induced levels of temporal variability is essential for robust trend analyses and for evaluating the effectiveness of restoration activities or changed management actions. Here, we used data collected as part of the Pacfish/Infish Biological Effectiveness Monitoring Project to evaluate the extent of temporal variability in instream habitat collected at the reach scale. We integrate habitat data collected yearly (2001 to 2009) at 50 sites experiencing a range of management activities into our analyses to better understand the consistency of temporal variability in watersheds with inherently different landscape characteristics and disturbance regimes. We initially decompose variance estimates to remove site-to-site variability, sampling error, and year effects and use the remaining variance as a measure of site-specific temporal variability. We then relate this temporal variability to landscape, management, and climate attributes at multiple scales to better understand which characteristics result in more or less variability in habitat attributes at specific sites. Our results suggest temporal variability differs significantly across individual sites and attributes within sites, indicating our ability to detect significant changes as a result of management changes and/or restoration efforts are context dependent. The spatial scale of landscape attributes (e.g., stream buffer vs. catchment) related to temporal variability also varied across individual attributes. Our efforts highlight the importance of considering site-specific measures of temporal variability as they relate to specific restoration and management goals.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Eric	Andersen	Oregon State University	andersee@onid.orst.edu

Presenting Paper *Student: True*

Co-Authors

Eric	Andersen	Oregon State University
Desiree	Tullos	5417372038
Jason	Dunham	USGS-FRESC

Title

A Bayesian Belief Network to Prioritize Restoration of Aquatic Connectivity, Western Oregon

Abstract

There are thousands of culverts that are barriers to fish passage in the Pacific Northwest. Fish require access to different habitats at different times in order to fulfill life history requirements. The cost of fish passage restoration for public lands alone in Oregon and Washington is estimated at $375 million. Prioritizing restoration efforts is necessary to effectively use limited resources while reconnecting the best quality habitat with a high probability of fish use. A decision support tool was developed in the form of a Bayesian Belief Network (BBN) to assist prioritizing restoration of aquatic connectivity. The BBN incorporates empirical evidence and expert opinion to depict factors affecting the decision to replace a barrier. The culvert's status, potential suitability of upstream habitat and the probability of habitat use combine to influence the biological benefit of replacing a culvert. The model provides a transparent and systematic framework for assessing the relative biological benefit when planning restoration. Uncertainty is accounted for using probabilities to represent node states. ESA listed steelhead trout (Oncorhynchus mykiss) in the Santiam River Basin Oregon are used as a test case in model development. The procedure can be generalized for other species and locales.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Matthew	Anderson	U.S. Forest Service	manderson08@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Guillermo	Giannico	Oregon State University
Steve	Jacobs	5417574263

Title

Redband in the Blitzen River: Migratory Behaviour of a Desert Trout

Abstract

Salmonids in arid high-elevation streams find themselves at the fringe of their tolerance range. In such environments, long-distance migratory movements among widely dispersed habitats may be an important mechanism for some fish to persist, and even thrive. The Donner und Blitzen (Blitzen) River redband trout (Oncorhynchus mykiss gairdneri) population is known to have a migratory life-history component, but little is known about the timing, spatial patterns, or ecological context of the migration. I tracked trout movements and passage delays at diversion dams with radio telemetry and passive integrated transponder (PIT) tags from March 2007 to June 2009. PIT tag readers established at four locations (river km 1, 35, 48, and 76) recorded large-scale movements of trout. My results indicated the existence of a life-history in which redband trout made long-distance migrations both as sub-adults and as adults. While adult trout migrated for reproductive purposes, movement of immature individuals appeared to be a response to seasonal stream temperature conditions. Trout migration rate was positively correlated with fork length and mean river discharge but was not associated with either tagging method or the number of dams passed. The upstream-most detection location for radio-tagged adults that reached potential spawning habitat was not different for trout from the lower river versus the middle river; however, lower river trout reached spawning habitats an average of 20 days later. This study highlights the importance of landscape-scale distribution of habitats and refugia in determining life-history and movement patterns of trout. Migratory behavior was related to both life-stage and environmental conditions. Maintaining connectivity with efficient passage throughout the river is a critical element in managing migratory fish populations like the one in this study.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kara	Anlauf	Oregon Department of Fish and Wildlife	kara.anlauf@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Dave	Jensen	
Ashley	Steel	
Kelly	Burnett	USDA Forest Service and Oregon State University
Kelly	Christiansen	USDA Forest Service and Oregon State University
Julie	Firman	Oregon Department of Fish and Wildlife
Blake	Feist	NW Fisheries Science Center, NOAA Fisheries

Title

Uncovering landscape controls to explain the variation in coho salmon (Oncorhynchus kisutch) habitat

Abstract

The distribution and composition of instream habitats are a reflection of landscape scale geomorphic and climatic controls. Correspondingly, Pacific salmonids are largely adjusted to and controlled by the quality and complexity of those instream habitat conditions. In this study, we describe the spatial patterns present in twelve stream habitat attributes, which are fundamental to salmonid population persistence, as a function of landscape composition. We focus on the correlative relationships that drive the presence and complexity of those specific aquatic habitats. In an attempt to disentangle anthropogenic landscape effects, we separated and summarized landscape factors into three groups: 1) stream power indicators, 2) immutable or un-managed factors, and 3) management influenced factors. We used stream reaches within coastal catchments of Oregon, selected from a probabilistic, spatially balanced sampling design. We applied three linear regression models in sequence based on the groupings above; final models were composed of the landscape factors from each group that best described the spatial variation seen in stream habitat. Landscape variables representing indicators of stream power best described active channel width and the percent of fine sediments in a reach. All habitat models were improved with the addition of immutable landscape factors, with wood volume and pool unit level complexity most influenced by these factors. Management influenced landscape factors accounted for a portion of the variance in each of the habitat variables, with the largest response seen in wood volume and pool frequency. These results highlight the importance of assessing spatial patterns in stream habitat from a landscape perspective in order to glean more pertinent details about finer scale complexity. This study contributes to the notion that influencing the conservation of freshwater resources will best be done by investigating stream systems from a landscape perspective.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Robert	Anthony	USFWS Coop Unit	robert.anthony@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Title

Legacy of PCBs in aquatic ecosystems of Alaska

Abstract

As previously discussed with Kelly Burnett, this abstract will be submitted in full next week.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Robert	Anthony	Department of Fisheries & Wildlife	Robert.anthony@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Keith	Miles	U.S. Geological Survey
Mark	Ricca	U.S. Geological Survey

Title

Sources of Environmental Contaminants in Bald Eagle Eggs from the Aleutian Archipelago

Abstract

Abstract: We collected 136 fresh and unhatched eggs from bald eagle (Haliaeetus leucocephalus) nests and assessed productivity on 8 islands in the Aleutian archipelago, 2000-02. Egg contents were analyzed for organochlorine contaminants, mercury (Hg), and stable isotopes of carbon (d13C) and nitrogen (d15N). Concentrations of SPCBs, DDE, and Hg in bald eagle eggs were elevated above background levels throughout the archipelago, but the patterns of distribution differed among the various contaminants. Total PCBs were highest in areas of past military activities on Adak and Amchitka Islands indicating local point sources of these compounds. Concentrations of DDE and Hg were higher on Amchitka Island, which was subjected to much military activity during World War II and the middle of the 20th century. Concentrations of SPCBs also were elevated on islands with little history of military activity (e.g. Amlia, Tanaga, Buldir) suggesting additional non-point sources of PCBs. Concentrations of DDE and Hg were highest in eagle eggs from the most western Aleutian Islands (e.g. Buldir, Kiska) and decreased eastward along the Aleutian chain. This east-to-west increase suggested a Eurasian source of contamination, possibly through global transport and atmospheric distillation and/or in body burdens of migratory seabirds. Contrary to our predictions, contaminant concentrations were not correlated with d13C or d15N in eggs. These latter findings indicate that contaminant concentrations were influenced more by point sources and geographic location than the trophic status of eagles. Contaminant levels in bald eagle eggs from the Aleutian archipelago indicated a mix of point and non-point sources of pollution, and they represent a formidable challenge in identifying the source of the contaminants in ecological systems.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Andy	Appleby	Washington Department of Fish and Wildlife/Hatchery Scientific Review Group	Andrew.Appleby@dfw.wa.gov

Presenting Paper *Student: False*

Co-Authors

Title

Theoretical Improvements in the Abundance and Productivity of Natural Salmonid Populations Achieved Through Changes in Hatche Broodstock Management

Abstract

A decrease in abundance and or productivity of natural salmonid populations due to negative effects by fish produced in hatcheries has been suggested and in some cases documented in the scientific literature. An analysis of all salmon and steelhead hatchery programs in the Columbia River basin was recently completed by the Hatchery Scientific Review Group. The results of this analysis have provided theoretical estimates of increased productivity and sometimes abundance in natural populations by implementing scientifically sound hatchery programs. A summary of the methods, assumptions, tools and specific examples of the analysis are presented. Tools used in the analysis allow comparison of changes in productivity and abundance parameters due to actions in harvest, habitat, and hatcheries. Interactions (synergy) between habitat, harvest, hatchery and hydro actions are also discussed.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Penny	Arentsen	Wallowa Resources - Wallowa Mountain Institute	Penny@wallowaresources.org

Presenting Paper *Student: False*

Co-Authors

Title

Wallowa Mountain Institute's Wallowa and Imnaha River Watershed Evaluations Team (WET) Program: Connecting Youth with the Watersheds through Hands-on Science and Discovery

Abstract

The Wallowa and Imnaha Rivers in Northeast Oregon, and the larger Lower Snake River Watershed, are vital links in the restoration of threatened Chinook Salmon and Steelhead populations. In 2007, Wallowa Resources – Wallowa Mountain Institute (WR-WMI) implented the Wallowa and Imanaha River Watershed Evalaution Teams (WET) program to study the health of these watersheds with local youth. In 2009, WR-WMI received program funding from the Oregon Chapter of the American Fisheries Society. WET is a collaborative watershed education, monitoring, and mentoring program for all schools in Wallowa County. Field teams of students and teachers, along with staff from WMI, the Nez Perce Tribe Fisheries, and the Oregon Department of Fish & Wildlife assess and track changing conditions in water quality and watershed function from headwaters in the Wallowa Mountains down to the Snake River. Goals of the program include:

1) To educate Wallowa County's students about their local watersheds and watershed health in Northeast Oregon.
2) To connect students with the local landscape, and understand their impacts on it.
3) To provide a hands-on field data collection experience for students.
4) To involve students in community service and stewardship through a volunteer, citizen science program.
5) To develop a mentoring relationship between middle and high school students, as well as natural resource professionals and Wallowa Mountain Institute field instructors.

WET is one of four core field science programs which comprise WR-WMI's Youth Stewardship Education Program. This program, along with an outdoor school program (OWL – Outdoor Wallowa Learning), a Friday field science program (WREN- Wallowa Resources Explorations of Nature), and a high school intern/apprentice program (HAWK- High School Apprentice Work Program) are integral in connecting Wallowa County's youth, our next generation of land stewards, with their natural world.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Ivan	Arismendi	USGS visiting researcher	ivanarismendi@gmail.com

Presenting Poster Student: False

Co-Authors

Carlos	Jara	Universidad Austral de Chile

Title

Facilitation by introduced North American beaver (Castor canadensis) on non-native European brown trout (Salmo trutta) and their combined effects on macroinvertebrate assemblages in freshwater sub-Antarctic ecosystems

Abstract

As non-native species introductions are increasing worldwide, multiple invaders occupying a receiving ecosystem are common. But, few studies are considering interactions between invaders or the combined effects of multiple invaders at the community level. In Tierra del Fuego in southern South America, we studied the interactions between two introduced species, brown trout (Salmo trutta L.) and North American beaver (Castor canadensis Kuhl) and the combined effects on macroinvertebrate communities. We compared four different study site types, including beaver ponds with trout, beaver ponds without trout, stream sections with trout but without beaver, and reference stream sections without trout or beaver. We found that beavers modify physical habitat in streams which results in an increase in macroinvertebrate density providing more food availability that facilitates better trout growth and well-being. Trout in streams sections without beaver have significantly lower growth rates and well-being. Also, there is a shift in macroinvertebrate composition from shredder and scraper functional feeding groups in reference stream stretches to gatherer/collectors in beaver ponds. Based on our data, we suggest the existence of additive effects (positive or negative) by the two invaders on gatherer, shredder and scrapper functional feeding groups. Our study shows evidence that similar evolutionary histories among invaders may promote synergistic interactions between them and those positive interactions among non-native species has the potential to disrupt ecosystems by amplifying invasions via indirect mechanisms and cause differential effects on natural food webs in the receiving ecosystems.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Leyla	Arsan	SWCA Environmental Consultants	larsan@swca.com

Presenting Paper *Student: False*

Co-Authors

Kim	Gould	SWCA Environmental Consultants
Steve	Novotny	SWCA Environmental Consultants

Title

Benthic Invertebrates in Contaminated Sediments of the Lower Willamette River

Abstract

A benthic macroinvertebrate survey was conducted in the downtown Portland reach of the lower Willamette River as part of a sediment characterization project to assess the nature and extent of environmental contaminants between river miles 12 and 16. Seventy six surface sediment samples were collected with a powered Van Veen grab at depths ranging from -10 to -79 feet. Sample sites were focused on locations with potential contaminant sources. Macroinvertebrates were identified to provide qualitative analyses about invertebrate communities in Willamette River sediments.

Thirty-five invertebrate taxa and one vertebrate (lamprey) were identified from a total of 3,879 organisms collected. Results indicate the following conclusions:

- A small number of taxa (4-6) dominated the benthic community (typical of the lower Columbia and Willamette Rivers).
- Medium gravel was the dominant grain size class where the ten most common invertebrate taxa were collected.
- Amphipods (Americorophium sp.), a documented prey species for salmonids, were one of the five most abundant taxa and the third most common (documented from a variety of depths and substrates).
- Invertebrate diversity and distribution did not appear to be correlated to contaminant concentrations.
- The sample with the greatest number of taxa (12) was one of four samples with the highest levels of total PCB aroclors.

Results of this study suggest that a community of benthic organisms persists in the lower Willamette River throughout a variety of depths and substrates despite measurable contaminant levels.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Leyla	Arsan	SWCA Environmental Consultants	larsan@swca.com

Presenting Poster Student: False

Co-Authors

Kim	Gould	SWCA Environmental Consultants
Steve	Johnson	5032240333
Ryan	French	SWCA Environmental Consultants
Kathleen	Williamson	SWCA Environmental Consultants
Elif	Fehm-Sullivan	National Marine Fisheries Service

Title

Methods for Monitoring the Effects of Channel Maintenance Dredging on Sensitive Species

Abstract

Three sampling methods were used to assess effects and risks from suction dredging and the efficacy of the existing in-water work windows designed to minimize impacts to ESA-listed salmonid and cyprinid species. Monitoring took place from 2006 through 2008 at multiple locations in the San Joaquin River deepwater ship channel and the Sacramento River deepwater ship channel. The fish community in the vicinity of the dredge was sampled by trawling near the bottom of the navigation channel to target demersal species most susceptible to entrainment. Entrainment monitoring in 2006 and 2007 used a sample cell method that sampled less than 1% of the dredge's output. In 2008, a mobile sampling screen device was developed and used at many of the disposal sites, allowing sampling of up to 10 percent of total daily dredge slurry discharge. Sampling results and lessons learned from these methods are presented, and their applicability to vulnerable Pacific Northwest species, including bivalves, Eulachon (Thaleichthys pacificus), and juvenile salmonids is discussed.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Leslie	Bach	The Nature Conservancy	lbach@tnc.org

Presenting Paper *Student: False*

Co-Authors

Title

Restoring Instream Flows through Changes in Operation of Dams and Diversions – Local Application of a Global Approach

Abstract

On streams with dams and diversions, there are often opportunities to restore instream flows through changes in operation of storage and diversion structures. Changing operations to restore ecological health while providing for human needs requires scientifically credible estimates of environmental flow requirements, specifically the quality, quantity and timing of flows needed to maintain the viability of aquatic ecosystems. The Nature Conservancy has developed a science-based process that utilizes ecological data and models, information from the scientific literature and expert knowledge to describe environmental flow requirements, including both high and low flows. These recommendations are incorporated into water management decisions using an adaptive management approach. The process has been applied and refined on projects around the world. In the Willamette River Basin, the Corps of Engineers operates 13 dams, which provide a range of goods and services, including flood management, hydropower, irrigation and recreation. Operation of these dams has resulted in alterations to the flow regime, which has significantly impacted fish and wildlife populations. To address this issue, the Corps and the Conservancy are partnering to determine environmental flow requirements downstream of the dams, and to identify opportunities to restore key aspects of the flow regime. Initial efforts in the Middle Fork Willamette River, which contains 4 of the 13 dams, resulted in a set of environmental flow targets, including small fall flow pulses, winter high flows, and summer low flows. During water years 2007 through 2009, the Corps implemented initial environmental flow releases to evaluate and test the process. The project is expanding to the McKenzie River, which contains 2 Corps dams and 2 Eugene Water and Electric Board dams. The Willamette has served as a demonstration project for other sites within and outside the United States.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Cyndi	Baker	Confederated Tribes of the Warm Springs Reservation of Oregon	cyndi.baker@wstribes.org

Presenting Paper *Student: False*

Co-Authors

Jen	Graham	Confederated Tribes of the Warm Springs Reservation of Oregon

Title

Development of a method to estimate escapement of adult Pacific lamprey at Willamette Falls

Abstract

Due to declining abundance of Pacific lamprey in the Columbia River, harvest has been limited; a primary collection location for the four Treaty Tribes (Warm Springs, Yakama, Umatilla, and Nez Perce) is Willamette Falls on the Willamette River (Rkm 42.6) in Oregon City, Oregon. Declining lamprey populations are of primary concern to the Confederated Tribes of Warm Springs Reservation, Oregon (CTWSRO) due to their high cultural and environmental value. Once a staple food in winter, and present at ceremonies, lamprey is often absent due to lack of availability. Despite cultural significance of this fishery, there is currently no estimate of adult escapement in the Willamette River. Harvest is the only indicator of trends in abundance but harvest rates are poor indicators of abundance. Through Columbia River Fish Accords, CTWSRO is developing a method for estimating escapement of adult Pacific lamprey at Willamette Falls. Goals in 2010 will focus on: 1) developing a protocol for indexing adult Pacific lamprey abundance at Willamette Falls for long-term monitoring; 2) determining feasibility of estimating abundance and escapement of adult Pacific lamprey at Willamette Falls; 3) investigating the detection rate of a half-duplex PIT tag interrogator at the Sullivan Plant at Willamette Falls to detect PIT-tagged Pacific lamprey used for the escapement estimate; and 4) creating a Willamette Falls Pacific Lamprey Working Group to coordinate research and monitoring activities and provide technical guidance. Development of a method to track changes in abundance of Pacific lamprey through time and estimate adult escapement will be used to better manage harvest levels and alert biologists of low returns to protect this unique fish species and the cultural fishery. As this project develops, protocols will be established, and monitoring of escapement will continue through 2010.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michael	Banach	Pacific States Marine Fisheries Commission (PSMFC)	mike_banach@psmfc.org

Presenting Paper *Student: False*

Co-Authors

Title

The “Protected Areas” List of the Northwest Power and Conservation Council

Abstract

"Protected Areas" are stream reaches where the Pacific Northwest Electric Power and Conservation Planning Council (Council) determined that hydroelectric development would have unacceptable risks of irreversible loss to fish and wildlife. In essence, Protected Areas are places where fish and wildlife values are judged to outweigh the value of electricity those areas could generate, and policies were implemented to discourage hydropower development in these areas. The Protected Areas list was completed in 1988; changes to the list were promulgated in 1989, 1990, and 1992. The Protected Areas protections have continued as a part of the Council's Fish and Wildlife Program dealing with future hydroelectric development, with protected classification information readily available on the StreamNet website (www.StreamNet.org). Interest in new hydroelectric development has risen over the past few years, renewing the importance of the Protected Areas list in natural resource planning and management. Today's generation of fisheries managers should be familiar with this important Northwest natural resource development policy and the protections it provides for valuable fish and wildlife habitats.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Brian	Bangs	Oregon Department of Fish and Wildlife	brian.bangs@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Paul	Scheerer	Oregon Department of Fish and Wildlife
Steve	Jacobs	5417574263

Title

Downlisting of Oregon chub in the Willamette River drainage: What's next?

Abstract

We monitored the distribution, status and trends of abundance of populations of Oregon chub, a small floodplain minnow endemic to the Willamette river drainage of western Oregon, by estimating fish abundance and from extensive fish surveys of over 750 off-channel habitats from 1991 through 2009. In 1991, only eight populations were known to exist, and Oregon chub were listed as endangered under the federal ESA in 1993. In 2009 we identified 46 populations of Oregon chub. Ten of these populations, including the two most abundant populations, are a result of successful introductions into isolated habitats. Oregon chub met the recovery plan criteria to downlist the species from “endangered” to “threatened” in 2007. Nonnative fishes, which were found to be widespread in off-channel habitats preferred by Oregon chub, remain the largest threat to full recovery and delisting of this species. In 2009, we initiated a floodplain monitoring study, as part of the U. S. Army Corps of Engineers’ Willamette Valley Biological Opinion, to identify those conditions (flow levels, temperature regimes) that may allow Oregon chub to thrive, and may enable them to co-exist with non-native fishes, in connected habitats. This study will assess the impacts of altered flow and temperature regimes, floodplain restoration, and reconnection of off-channel habitats on habitat availability and fish communities downstream of Dexter Dam on the Middle Fork Willamette River. This talk will present the study plan and results of initial sampling.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Craig	Banner	ODFW Fish Health Services	bannerc@onid.orst.edu

Presenting Paper *Student: False*

Co-Authors

Tony	Amandi	ODFW Fish Health Services

Title

ODFW's Fish Health Survey of Naturally Produced Fish

Abstract

Several years ago ODFW Fish Health Services began monitoring the health of naturally reproducing populations of fish. The study is directed toward the detection of major pathogens of salmonids. Fish sampled are examined for or tested to detect viruses, Renibacterium salmoninarum and parasites (including Myxobolus cerebralis). Effort has been expanded to include other species incidentally sampled. Data accumulated from fish examinations is stored in a database that with continued addition of information will prove to be an invaluable tool documenting the distribution of parasites and pathogens in Oregon. The program is dependent on the involvement of district biologist providing samples taken during annual fish inventories and other fish sampling efforts. Results of the study to date will be presented and the rationale for undertaking the program will be discussed.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Jerri	Bartholomew	Oregon State University	bartholj@science.oregonstate.ed

Presenting Paper *Student: False*

Co-Authors

Title

Effects of Ceratomyxa shasta infections on Klamath River Salmon

Abstract

Severe infection by the myxozoan parasite Ceratomyxa shasta has contributed to the declining numbers of juvenile Klamath River fall Chinook and coho salmon and subsequent impacts on later adult returns. Over the past 7 years, efforts in our laboratory have been directed at understanding the ecology of the parasite in the Klamath River with a goal of reducing disease effects. A monitoring program that utilizes real-time PCR assessment of water samples has provided insights on the temporal and spatial occurrence of the parasite. This monitoring has identified an area of the river below Iron Gate Dam where parasite abundance reaches >10-100 parasites/L. Sentinel studies conducted in this area provide evidence that an exposure dose of 10 parasites/L represents a threshold for mortality in native Chinook and coho salmon. Results of sentinel fish exposures in 2009 show that disease effects this year were severe and also suggest that the infectious zone was expanded in 2009. In contrast to the high mortality in salmon in the lower river as a result of C. shasta, exposure of salmon at a location with similar parasite densities in the Williamson River did not result in mortality. Investigation of this anomaly resulted in identification of four parasite genotypes that appear to have specificity for different salmonid species. All of this data is being incorporated into a disease model that will inform efforts directed at reducing parasite numbers and enable us to make predictions on disease effects as either dam removal or fish passage plans progress over the next decade.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Arthur	Bass	Oregon State University Department of Fisheries and Wildlife	arthur.bass@oregonstate.edu

Presenting Paper *Student: True*

Co-Authors

Guillermo	Giannico	Oregon State University Department of Fisheries and Wildlife

Title

Tide Gate Impacts on Coho Salmon Movement

Abstract

Tide gates are one-way doors integrated into dyke systems that prevent saltwater intrusion to agricultural land and allow freshwater drainage to the estuary during low tide. Tide gates may act as fish passage barriers for juvenile salmonids, limiting movements during migration and access to rearing habitats. Passage opportunity is determined by how frequently the tide gate is open, whether or not the tide gate culvert is perched, and water velocity at the tide gate outlet. We conducted our research in Coos Bay, one of the many Oregon estuaries with extensive use of tide gates. Our objectives were to 1) develop a methodology for recording fish passage at tide gates 2) describe the conditions under which fish passage occurs and 3) compare fish passage behavior between a top-hinged tide gate, a side-hinged tide gate and a non-gated stream. We installed stationary passive integrated transponder (PIT) antennae around a top-hinged gate, a side-hinged gate and in a non-gated reference system to track the movement of PIT tagged juvenile coho salmon. A tilt logging device allowed us to pair fish detections with tide gate opening angle. Velocity at passage was back calculated to match passage detections based on water surface elevations and opening angle. Results from ongoing (March 2008 through 2009) data collection will be presented.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Douglas	Bateman	Oregon State University	doug_bateman@usgs.gov

Presenting Paper *Student: False*

Co-Authors

Robert	Gresswell	NRMSC/USGS
Aaron	Berger	5173550126
David	Hockman-Wert	FRESC/USGS

Title

Patterns of Cutthroat Trout Growth, Survival and Movement in Headwater Streams Before and After Logging

Abstract

Throughout the Pacific Northwest, clearcut timber harvest continues to be a common practice. The effects of current harvest methods on downstream (cumulative) portions of the aquatic network are not well documented. Therefore, we sought to quantify spatial and temporal patterns of growth, survival and movement of coastal cutthroat trout (Oncorhynchus clarkii clarkii) in two, experimentally-paired watersheds in the Cascade Range Mountains of Oregon, before and recently after logging. A total of 4,406 trout (>100 mm, fork length) were implanted with half-duplex passive integrated transponder (PIT) tags and monitored seasonally during a 5-year period (3 years before and 2 after harvest) using a combination of electrofishing and mobile and stationary PIT-tag antennas. Growth was evaluated by direct measurement of recaptured individually marked fish. Survival and movement were estimated using maximum likelihood models in program MARK, and AIC was used to assist with model selection. Preliminary results indicate that no detectable difference in annual relative growth rates were observed in either watershed (Mann-Whitney U test, P = 0.58 and 0.70 for North (reference) and South Forks of Hinkle (treatment) respectively). Preliminary findings suggest that there has been no evidence of a biologically significant treatment effect on annual survival rates of age 1+ coastal cutthroat trout. Survival varied more among years and seasons than between or within watersheds. The preliminary analysis found a statistically significant difference in within basin (tributary to mainstem or vice versa) transition probability was detected in the S. F. Hinkle post-harvest. Because the increase was small (< 2%) and there was no net directional component there is little evidence to support that this is a biologically significant change in behavior.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Ray Beamesderfer Cramer Fish Sciences beamesderfer@fishsciences.net

Presenting Paper *Student: False*

Co-Authors

Title

The fish are in charge: effective salmon fishery management in a dynamic and unpredictable world

Abstract

Effective salmon fishery management systems must be designed to succeed in concert with normal variation and uncertainty in fish returns rather than in spite of these confounding effects. Salmon returns are extremely dynamic, varying widely from year to year in response to normal and abnormal environmental patterns as well as simple random chance. This variability confounds our ability to forecast numbers and to regulate fishing to meet stock-specific escapement objectives and limit fishery impacts on weak stocks. Inability to accurately forecast returns and abrupt in-season fishery changes that result from inaccurate forecasts are extremely disruptive, impact our ability to meet allocation objectives among different fisheries, and contribute to damaged perceptions of fish and wildlife management agencies. This presentation describes a risk-based approach to fishery management that recognizes and allows for normal variation and uncertainty. Examples contrast the approach to weak Columbia River stocks where management is driven by Endangered Species Act limitations with strong Alaskan stocks where the management intent is to optimize production

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

John Beeman U.S. Geological Survey jbeeman@usgs.gov

Presenting Paper Student: False

Co-Authors

Steve Juhnke U.S. Geological Survey

Title

Factors affecting coho smolt survival in the lower Klamath River

Abstract

Coho salmon (Oncorhynchus kisutch) populations in the lower Klamath River were listed as threatened under the Federal Endangered Species Act and the Biological Opinion that followed spurred several management actions. One action was for the implementation of minimum discharges at the lowermost of six dams on the Klamath River. The premise behind this action was that increased discharge during spring would increase survival of smolt coho salmon and aid in recovery. This hypothesis appears logical, but had not been studied in the Klamath River. A study of the relation between coho smolt survival and environmental factors including river discharge was conducted between 2006 and 2009. Discharge at the dam was not experimentally controlled, however survival rates were evaluated under a wide range of observed flow conditions during the four year study. In each year, apparent survival of radio-tagged fish released near Iron Gate Dam was estimated in seven different river reaches downstream a Cormack-Jolly-Seber mark-recapture models. Estimates of apparent survival through 276 km downstream from the dam ranged from 0.406 (SE 0.032) to 0.659 (SE 0.049) among years. The lowest estimates and greatest differences in apparent survival among years were in areas upstream from the Scott River, the first 75 km downstream from the dam. These differences coincide with differences in migration behavior among reaches. The effects of river discharge, water temperature and several other variables on survival were evaluated using multimodel inference and will be presented.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Natasha Bellis The Freshwater Trust natasha@thefreshwatertrust.org

Presenting Paper Student: False

Co-Authors

Title

Transactional Approaches to Flow Restoration- Case Stuides of The Freshwater Trust in the Umatilla and Grande Ronde Basins

Abstract

The Freshwater Trust is a non-profit organization formed by the merger of the Oregon Water Trust and Oregon Trout. The merger of these two veteran water restoration specialists resulted in an organization capable of addressing all aspects of freshwater ecosystem restoration. As one area of focus, The Freshwater Trust restores streamflow using a variety of cooperative, market based solutions. Incorporating the expertise of the nation's first water trust, TFT has more than 15 years experience conducting water right transactions to restore instream flow.

This presentation will focus on The Freshwater Trust's flow restoration work in the Umatilla and Grande Ronde basins of north-eastern Oregon. Highlights include projects with the Confederated Tribes of the Umatilla Indian Reservation, and a minimum flow agreement with over 80 landowners on the Lostine River, a tributary to the Wallowa River.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Natasha	Bellis	The Freshwater Trust	natasha@thefreshwatertrust.org

Presenting Paper *Student: False*

Co-Authors

Aaron	Maxwell	The Deschutes River Conservancy

Title

Tools for Instream Restoration

Abstract

Water continues to become an increasingly scarce resource across the arid West, including in Oregon where many rivers and streams are currently over appropriated. Water demands for irrigation, municipal, and other beneficial uses often come at the expense of fish and wildlife dependent on adequate stream flow. Low water quality and diminished habitat frequently accompany Oregon rivers subject to excessive water withdrawals and flow manipulations during critical times of the year. However, through many collaborative and creative efforts, governmental and non-governmental organizations alike have been able to restore flows to streams in many of Oregon's river basins.

Numerous methods are available for restoring flows to Oregon's rivers and streams. These include conserved water projects, instream leasing, permanent and temporary water right transfers, water banking, as well as a myriad of adaptive management strategies. The success of these efforts ultimately depends on collaborative relationships between a variety of stakeholders to satisfy a multitude of needs that , in the end, result in win-win water management scenarios. The intent of this presentation is to give a brief overview of the tools used in Oregon to put water back instream while preserving economically and socially valuable agricultural and municipal practices.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Patricia A.	Benner	River Historian and Ecologist	bennerp@peak.org

Presenting Paper *Student: True*

Co-Authors

Title

Willamette River 1906 channel change set the stage for a legal legacy

Abstract

In the 1800s the Willamette River channel made a wide S-turn as it approached Corvallis. There was concern that the Willamette might abruptly change course and bypass the town as the river continued to erode the bank and deepen the river bend. At that time the U.S. Army Corps of Engineers studied a couple of options: either relocate the river by enlarging a high flow channel, or stabilize the eroding bank. The Corps chose the latter, as it predicted that the grade of a new channel would be too steep for steamboats. In 1900, several months after the completion of the third phase of a revetment to stabilize the bank, the Willamette reconnected with the high flow channel. By 1906, the river completely switched course to this new channel. This channel change set the stage for a landmark U.S. Supreme Case (1977) that concluded that the bed of the channel created by an avulsive change after Oregon's admission into the Union (1859) was in private ownership. The first significant modification of public title to the Willamette River's "submerged and submersible lands" after statehood occurred in 1874. The Oregon State Legislature modified public ownership of much of the bank of the Willamette from the original ordinary high water line to the ordinary low water line. Questions arise with regard to State policy that determined retention of public ownership of the Willamette River's secondary channels, alcoves and channel remnant wetlands.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kenneth	Bierly	Oregon Watershed Enhancement Board	ken.bierly@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Funding with Dedicated Lottery Funds for Flow Protection and Ecological Flows

Abstract

The Oregon Watershed Enhancement Board was established by the 1999 Legislature to provide funding for fish and wildlife habitat protection and enhancement. Among the funding authorities provided to the agency is the ability to fund the acquisition of property or interest in property such as water rights. To date, OWEB has provided funds for a limited suite of activities affecting flow. The history of funding for flow protection will be discussed and the lessons learned from the last decade will be shared from a funders perspective.

The presentation will provide a brief summary of the recent efforts to develop a more targeted effort to address the funding for water acquisition. The short term effects of the joint state-federal Conservation Reserve Enhancement Program will also be described to show how water conservation is being linked to riparian restoration.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Peter	Bisson	PNW Research Station	pbisson@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Title

Habitat Limiting Factors for Pacific Salmon: Short-, Medium-, and Long-Term Considerations

Abstract

The concept of limiting factors for Pacific salmonids has changed over the last four decades. Originally, a limiting factor was viewed as some aspect of the environment that constrained productivity, and removing that constraint was assumed to lead to greater abundance of a population of interest. Allowed to remain, putative limiting factors, e.g., lack of winter habitat, were believed to be the same from year to year. Recent advances in ecosystem science have shown that the environment is anything but constant, regardless of the time period of concern. Furthermore, the emphasis of habitat management has fundamentally shifted from enhancement ("produce more fish") to conservation ("prevent extinctions and recover stocks"). These important paradigm shifts necessitate a broader approach to addressing limiting factors, one that includes large areas and time scales of decades to centuries. I argue that the majority of attempts to fix limiting factors have involved actions that improve the survival and growth of species-specific life cycle stages over limited time intervals (usually seasonally). While this approach is appropriate for short-term problems, it may not address problems that limit population persistence and resilience at longer time scales, nor does it address problems that threaten the capacity to adapt and evolve that are required of species over hundreds of years. The time is right for habitat managers to broader their perspective of limiting factors by planning for the long-term demographic consequences of habitat management actions in terms of persistence and viability at very large scales. Specifically, and in no particular order of importance, this includes "limiting factors" such as climate change, human population expansion, invasive species, and extraordinary geological events. Without thoughtful and proactive planning, such long-term irreversible factors can potentially override the benefits derived from local habitat improvement actions.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Paul	Blanton	Dept. of Geography, University of Oregon	pblanton@uoregon.edu

Presenting Paper *Student: True*

Co-Authors

Title

Floodplain infrastructure and disconnected rivers: mapping obstacles and opportunities for habitat preservation and restoration

Abstract

Floodplain roads and railroads are ubiquitous features in the river landscapes of the U.S., and these features act as longitudinal 'dams,' disconnecting rivers from their floodplains, degrading habitat structure and function. Such lateral disconnection particularly impacts side and off channel habitat vital to many fish species, including endangered salmonids. On a shorter time scale, rail lines and roads interrupt flood and flow pulses and the exchange of flows of water, biota, and sediment between stream channels and their floodplains. Over longer time periods, these structures affect floodplain dynamics by impeding the natural avulsion, meandering, and migration of channels across their floodplain. Other floodplain features such as dikes, levees, and gravel pits likewise affect floodplain connectivity. Research on lateral disconnection on the Yakima and Chehalis rivers in Washington State demonstrates the utility of mapping and classifying floodplain disconnections, and quantifies the impacts of floodplain disconnections on the geomorphic and hydrologic processes that create and maintain fish habitat. Such modification of the floodplain results in a decrease in the following metrics: channel width, sinuosity, channel complexity, proportion of bank with riparian gallery forest, and large woody debris. In addition, lateral disconnection leads to channel, side channel, and floodplain habitat simplification and degradation. I developed a conceptual model for classifying and analyzing floodplain disconnections, their environmental impacts, and their potential for removal or modification. GIS (Geographic Information Systems) and digital geologic, hydrologic, and transportation data may be used to quickly and inexpensively make floodplain maps for assessing the potential for aquatic restoration, particularly in the context of re-establishing connections between main channel and off-channel habitat.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Steve	Boe	Confederated Tribes of the Umatilla Indian Reservation	sboe@eou.edu

Presenting Paper *Student: False*

Co-Authors

Crump	Carrie	Confederated Tribes of the Umatilla Indian Reservation
Wolf	Jeremy	5419623283

Title

Reintroduction of spring Chinook salmon into Lookingglass Creek, Oregon

Abstract

Lookingglass Creek, a tributary of the Grande Ronde River in northeastern Oregon, provided valuable subsistence fisheries to indigenous peoples for native spring Chinook salmon prior to construction of dams on the Columbia and Snake Rivers. Shortly after the construction of Lookingglass Hatchery in 1982, an already declining population became functionally extinct. Both non-endemic (Rapid River, Idaho) and endemic (Catherine Creek) stocks have been used to reintroduce spring Chinook salmon.

Results of the reintroduction efforts have been monitored with standard methods (outmigrant trapping, spawning ground surveys). We will use outmigrants produced, smolt-to-adult ratios, and redds to describe productivity of this population as the stock composition has shifted from native to Rapid River to Catherine Creek. We will describe the factors currently limiting natural production and how natural production compares to other supplemented populations in the Grande Ronde Basin.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Derek Booth Stillwater Sciences dbooth@stillwatersci.com

Presenting Paper *Student: False*

Co-Authors

Title

The National Research Council's review of stormwater permitting—is there a regulatory path to healthy urban streams?

Abstract

At the request of US EPA, the National Research Council recently completed a two-year review of the current NPDES (National Pollutant Discharge Elimination System) process for municipal, industrial, and construction stormwater permits. The final report carried a number of recommendation relevant to those communities and regions attempting to protect stream resources, particularly biological resources, from the ever-expanding influence of urban development. This has particular implications for the Oregon Plan, because NPDES stormwater permits are one of the few regulatory vehicles for reducing the impacts of human settlements on salmonids. In other words--if this mechanism doesn't work, we may have no credible options that do.

Chief amongst the NRC recommendations are:

- Despite substantial levels of funding, the current NPDES regulatory approach is not likely to adequately control stormwater impairment of waterbodies.
- Stormwater management should be based on watershed boundaries, not political boundaries.
- There is a direct but complex relationship between land cover and the biological condition of downstream receiving waters.
- Watershed models are useful tools for predicting and mitigating downstream impacts from urbanization, but they are incomplete in scope and cannot define definitive causal links between polluted discharges and downstream degradation.
- Stormwater control measures can only be successful when part of an integrated system implemented at multiple scales within a watershed. Nonstructural stormwater measures, such as product substitution, better site design, downspout disconnection, conservation of natural areas, and watershed and land-use planning, can dramatically reduce the volume of runoff and pollutant loads. In particular, EPA should be more vigorous in regulating the national availability of products that contribute significantly to stormwater pollution.
- Present funding levels are insufficient; greater federal financial resources will be needed if state and local efforts to regulate stormwater are to be successful.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Katie	Borgen	Department of Fisheries and WIldlife	Selina.heppell@oregonstate.edu

Presenting Poster Student: True

Co-Authors

Marybeth	Head	Department of Fisheries and Wildlife
Mark	Mills	Department of Fisheries and Wildlife
Jacci	Zappa	Department of Fisheries and Wildlife
Selina	Heppell	Department of Fisheries and Wildlife

Title

Diet and growth in juvenile lingcod (Ophiodon elongatus)

Abstract

Growth rates of juvenile lingcod are linked to diet and temperature. Development of greenish-blue pigmentation of the skin and muscle is also thought to be affected by diet, although this has yet to be confirmed in a controlled laboratory study. The greenish-blue pigmentation may be due to hemocyanin-based respiratory proteins that carry oxygen in the blood of prey items such as mollusks and crustaceans.

We conducted a feeding experiment to measure lingcod growth and to see if fish on a hemocyanin-based diet would turn green. Sixteen juvenile lingcod were caught by rod and reel off of Depoe Bay and Lincoln City, Oregon. Lingcod were reared in two six foot round tanks at the Hatfield Marine Science Center, Newport, Oregon. Tanks were partitioned into two separate sections, resulting in four different feeding units, each containing four fish. After the fish were acclimated and habitually eat herring pieces fed using a feeding stick, we assigned them to a diet of squid or sardines. Feeding rates and growth rates of the fish were compared over a 2 month period. At the conclusion of the experiment, we will examine the coloration of the skin and muscle to determine if the squid diet induced a blue-green pigmentation change.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Ryan	Braham	U.S. Geological Survey, Western Fisheries Research Center, Klamath Falls Field Station	rbraham@usgs.gov

Presenting Paper *Student: False*

Co-Authors

David	Hewitt	U.S. Geological Survey, Western Fisheries Research Center, Klamath Falls Fiel Station
Mark	Johnson	5412738689

Title

An Evaluation of Otoliths, Opercular Bones, and Fin Rays for Aging Lost River and Shortnose Suckers

Abstract

Lost River and shortnose suckers are federally endangered, long-lived catostomids endemic to the Upper Klamath River Basin of southern Oregon and northern California. Age data for these species are expected to complement ongoing research efforts, making it possible to monitor changes in the age structure of the populations and to document recruitment into adult spawning populations. We evaluated three hard structures commonly used to age catostomids to determine their utility in aging Lost River and shortnose suckers: otoliths, opercular bones, and sectioned fin rays. Structures from 80 Lost River and 50 shortnose suckers were used in a three-reader triple-blind study to assess among-reader precision for each structure and to compare age assignments among structures. We also attempted to validate the formation of the first annulus in each structure using known-age juveniles collected in 2008. Results from the comparative precision study indicated that aging error was substantial; all readers and all structures rarely agreed on a single age for an individual. We concluded that age assignments should be used as relative indicators of age, especially for older fish. Each structure presented challenges, but otoliths were particularly difficult to prepare and read. Many otoliths were considered unreadable by one or more of the readers, whereas very few opercular bones or fin ray sections were deemed unreadable. False annuli (checks) were common and may result from poor summer water quality conditions in Upper Klamath Lake. We were able to identify the first annulus in opercular bones, sectioned fin rays, and all but a few otoliths. Sectioned fin rays show promise as a non-lethal method for acquiring age data, which will be important for future work on these endangered species.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Missy	Braham	Bureau of Reclamation	mbraham@usbr.gov

Presenting Poster Student: False

Co-Authors

Alex	Wilkens	Bureau of Reclamation

Title

Endangered Lost River and shortnose suckers in Lake Ewauna and use of the Link River Dam fish ladder, Oregon

Abstract

Passive Integrated Transponder (PIT) tags were used to investigate endangered adult Lost River sucker Deltistes luxatus and shortnose sucker Chasmistes brevirostris use of the Link River fish ladder to return to Upper Klamath Lake, Oregon. Suckers were tagged in Lake Ewauna throughout the late winter and early spring of 2008 and 2009. Trammel nets were set one hour before sunrise and retrieved after four hours of fishing. Using a stratified random sampling technique, in 2008, we found the suckers tended to use the northern end of Lake Ewauna in late March to early May. In 2009, we utilized this information to target our sampling and maximize catches. In 2008, we PIT tagged 126 suckers of which 63% were shortnose and 14% were Lost River. In 2009 we PIT tagged 519 suckers of which 72% were shortnose and 13% were Lost River. Eighteen percent of the 2009 tagged suckers were recaptured in 2009 and 11% of the 2008 tagged suckers were recaptured in 2009. This study is in collaboration with the US Geological Survey's (USGS) Klamath Falls Field Station. USGS is monitoring sucker movements through the Link River Dam fish ladder using four fixed underwater PIT tag antennas arranged throughout the ladder. In 2009, USGS detected 16 suckers using the fish ladder; 15 were from our 2008 and 2009 Lake Ewauna PIT tagging efforts. Three of the 16 suckers were later detected at other USGS monitoring sites in the upper reaches of Upper Klamath Lake. This study will provide information on the degree of connectivity between Upper Klamath Lake and Lake Ewauna suckers, and lead to refined operational procedures for the Link River Dam fish ladder. Although Lake Ewauna is considered unsuitable for suckers, this study suggests they may be able to survive in numbers.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Linda	Brown	Confederated Tribes of Warm Springs	jdborestoration@ortelco.net

Presenting Paper *Student: False*

Co-Authors

Maxine	Day	Oregon State University Extension Service
Wendy	Neal	5418203568

Title

Easter Oregon Natural Resource 4-H Science Camp

Abstract

The Partners in this proposal have created a Natural Resource Career Camp for 6th - 12th graders in the Northwest. We are brining rural and urban youth throughout the Northwest region to an education forum camp, having them interact over a 3.5 day period with professionals in Fisheries, Paleontology, Hydrology, Forestry, Range, Alternative Energy and many others. Young adults in rural areas have only known logging and ranching as their avenues of employment while urban youth have little to no exposure to nature at all. Through this camp we wish to educate youth in natural resource employment opportunities that will allow them to create an outdoor lifestyle and to spark their interest in one of the many natural resource careers available. The camp is going to continue to grow, with the ability to include up to 100 youth each year for a week. Volunteers from various agencies and non profit organizations are excited about the program and have come forward to assist with this camp, we have Biologists from ODFW, CTWSRO, Forest Service, as well as, OSU Extension Agents, Educators and First Aid/Survival Specialists, to do there part to expand the horizons of young people.

As a result of attending the Eastern Oregon Natural Resource 4-H Science Camp, youth will:

•Increase in their appreciation and enjoyment of the outdoors, natural resources, and science.
•Increase in their understanding of natural resource ecology and management.
•Learn to teach and provide leadership in natural resources.
•Become stewards in local natural resources projects.
•Develop career and personal interests in natural resource ecology and management.
•Increase understanding of the differences and similarities between urban and rural environmental perceptions.
•Become aware of the wide diversity of ecosystems present in Eastern Oregon and how it applies to their home environment.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Amanda	Bryson	Pacific Northwest National Laboratory	amanda.bryson@pnl.gov

Presenting Paper *Student: False*

Co-Authors

Kenneth	Ostrand	USFWS-Abernathy Fish Technology Center
William	Simpson	
Cory	Suski	University of Illinois at Urbana-Champaign

Title

Behavioral and Physiological Response of White Sturgeon to an Electrical Sea Lion Barrier System

Abstract

California sea lion (Zalophus californianus) predation of returning adult Pacific salmon (Oncorhynchus spp.) in the Columbia River basin has become an increasing concern for biologists and fishery managers. A demonstration project using a non-lethal electronic barrier to deter sea lions has been proposed as a means to reduce fish predation. Therefore, we examined the behavioral and stress related effects of an electric fish barrier on adult white sturgeon. Sturgeon behavior was altered using both “soft start” and continuous operation. No initial or delayed mortalities were observed using “soft start”, as well as no initial mortalities using continuous operation. However, we did experience one delayed sturgeon mortality during continuous operation. Sturgeon had significant physiological stress when subjected to acute electrical exposure. We did not find signs of notochord injuries or hemorrhages in four of the five sturgeon euthanized after electroshock. Our results suggest that under controlled lab conditions the electrical barrier effects white sturgeon behavior and physiology. However, proper placement of the structure and thoughtful consideration regarding the timing of its operation should circumvent the majority of potentially negative alterations to migratory behavior.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Michael	Burger	BioSonics, Inc.	mburger@biosonicsinc.com

Presenting Paper *Student: False*

Co-Authors

James	Dawson	BioSonics, Inc.
Bob	McClure	2067822211

Title

Fish Passage and Entrainment: Automated, autonomous, remote site monitorintg and assessment.

Abstract

The increased focus on relicensing of existing projects and installation of new smaller hydroelectric projects at remote sites and on smaller waterways requires rethinking traditional assessment and monitoring techniques. The use of autonomous, automated, hydroaocustic systems provides the ability to monitor fish passage (bi-directional), behavior and abundance, continououlsy recording flow-related, diurnal and seasonal changes. This techniques reduces or eliminates the need to "take" fish, reducing the regulatory requirements associated with capture and tagging programs and greatly enhancing the information available from those programs. Examples of recent project planning, design, implementation and results are presented.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Meeting: ORAFS10

Author

Jennifer	Burke	University of Washington School of Aquatic & Fishery Sciences	jb.snowfish@gmail.com

Presenting Paper *Student: False*

Co-Authors

Kim	Jones	Oregon Department of Fish and Wildlife

Title

A logical and flexible model to describe habitat quality for salmonids in the Pacific Northwest

Abstract

Fishery managers are commonly tasked with the basic question “Will the habitat in a watershed still support the fish populations that historically resided in it” In response to the desire to reestablish fish populations in 375 kilometers of stream above the Round Butte-Pelton Dam complex at Rkm 161, we developed a limiting factors model (HabRate) that assessed the potential quality of stream habitat for each life stage of salmon and steelhead using stream survey data. Stream surveys had been conducted in most of the available stream habitat, but had not been synthesized in a form that allowed managers to view the quality and complexity of stream habitat in an easily understandable fashion. The model was developed for a specific application to the middle Deschutes River basin in Oregon, but was intended for general application to the Pacific Northwest Basins. Design criteria for the spreadsheet model were simplicity and flexibility. Habitat requirements for discrete life history stages (i.e. spawning, egg survival, emergence, summer rearing, and winter rearing) were defined based on published literature on salmonid habitat requirements. Logical statements were used to interpret and rate the quality of reaches as poor, fair, or good, based on attributes relating to stream substrate, habitat unit type, cover, gradient, temperature, and flow. The model is a decision making tool that is intended only to provide a qualitative assessment of the habitat potential of stream reaches within a basin context. Model output describes habitat quality by species and life stage for each reach of stream. The results can be integrated into a GIS coverage coupled with the stream network and habitat data to provide a comprehensive map-based perspective of habitat quality in a watershed.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kelly	Burnett	USFS Pacific Northwest Research Station	kmburnett@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Guillermo	Giannico	Department of Fisheries and Wildlife
Jeff	Behan	

Title

What Can Clinical Medicine Teach Fisheries Science? A Systematic Review on the Effectiveness of Placing Large Wood in Streams

Abstract

Systematic review, widely used in clinical medicine, is a rigorous technique to synthesize and assess all evidence about the efficacy of an active intervention (e.g., surgical procedure or drug). Systematic reviews differ from traditional literature reviews by narrowly targeting a single question with a predetermined protocol for finding, screening, and synthesizing relevant primary research. Evidence quality evaluation and documentation are fundamental traits of systematic review. Former Governor Kitzhaber suggested that a systematic review process could be adapted from medicine to produce an objective, transparent, and credible evidence base for forest policy. Thus, the Oregon Board of Forestry commissioned a prototype, which the systematic review team subsequently tailored to address the question "Does instream wood placement affect salmonid abundance, growth, survival, or habitat complexity?" A reference librarian designed and implemented the search strategy, specifying lists of key terms, Boolean operators, electronic databases, search engines, and library collections. Two reviewers developed and applied criteria for summarizing and evaluating the relevance of each identified publication, including assessing rigor of study design and statistical analyses. Ultimately, 33 peer-reviewed publications were fully reviewed but only 10 of these meet the criteria of high relevance. Results from these high-relevance publications suggest short-term improvements in habitat consistent with objectives of placing wood in streams. Surprisingly little evidence supports the efficacy of large wood placement for increasing the abundance, survival, or growth of any salmonid species. Much less than definitive science is available to inform decisions about whether to implement and how to design in-stream wood placement projects. Systematic reviews show promise for fisheries science in synthesizing technical information as objective and authoritative, helping define "best available science," and identifying knowledge gaps to guide future research. This is especially true if partnerships can be established for funding and conducting systematic reviews that are of broad interest.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Lee	Cain	Astoria High School	lcain@astoria.k12.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Astoria High School Aquatic Biology Program

Abstract

The Astoria High School (AHS) Aquatic Biology Program is a unique curriculum based out of the AHS Applied Science Center, a ~5000 square foot wetlab, classroom and hatchery facility located on a spring-fed stream immediately adjacent to the school. The center is designed to support collaboration between professional researchers who need laboratory space and the students in the program. Students work through the semester-long classes of Fisheries Biology, Marine Biology, and then go into Fisheries Technology, a year-long advanced course in aquaculture and fisheries science providing hands-on experience in fish propagation, invertebrate sampling, stream surveying, water quality testing, experimental research design, and other fisheries techniques. Training occurs in the AHS hatchery and at off-campus sites. Students also assist local projects involving fisheries and habitat research and restoration, including the Clatsop County Fisheries Project, Columbia River Estuary Study Task Force, National Park Service (Lewis and Clark National Historic Park), and various habitat enhancement projects of the Young's Bay Watershed Council. Students receive a Certificate of Fisheries Skills at the end of the year for addition to their portfolio. The philosophy of this approach is that student learning needs to be actively articulated with the research community. It is hoped that by sharing this model, other schools will emulate the model in their regions according to their unique resources available.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Robbins	Church	US EPA, NHEERL, WED	church.robbins@epa.gov

Presenting Paper *Student: False*

Co-Authors

Joe	Ebersole	US EPA, NHEERL, WED
Kirk	Rensmeyer	5417544473
Ryan	Couture	OHRC, ODFW
David	Noakes	Oregon State University

Title

Analysis of Stable Isotopes in Fish Mucus During a Controlled Diet Switch

Abstract

Analysis of Stable Isotopes in Fish Mucus During a Controlled Diet Switch

Robbins Church - US EPA, NHEERL, WED, Corvallis, OR
Joe Ebersole - US EPA, NHEERL, WED, Corvallis, OR
Kirk Rensmeyer, NAPCA, Corvallis, OR
Ryan Couture - Oregon Department of Fish and Wildlife, OHRC, Alsea, OR
David Noakes – Oregon State University, Corvallis, OR

We have used a controlled diet switch in steelhead trout (Oncorhynchus mykiss) at the Oregon Hatchery Research Center to study the time rates of changes in stable isotopes of carbon and nitrogen (?13C and ?15N) in epidermal mucus, a rapidly responding "tissue." Because of the rapidity with which mucus responds, due to high rates of synthesis and turnover, it holds promise for stable isotope analyses of diet or habitat switching of fish in certain natural situations. Controlled diet switch studies of mucus dynamics in fish are very limited, however. In our experiment we switched the diets of eighteen individually PIT-tagged fish from one with relatively higher delta values (?13C = -21, ?15N = 13) to one with relatively lower delta values (?13C = -26, ?15N = 3). Delta values for actively feeding fish responded rapidly in mucus with half lives typically less than 20 days. Assuming that mucus is synthesized primarily from either recently ingested feed or recycled muscle tissue allows computation, via the reaction progress variable approach of Cerling et al., of the relative contribution of each source to mucus synthesis. To our knowledge, such determinations have not been previously reported.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Benjamin	Clemens	Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries and	Ben.Clemens@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Tiia	Workman	Oregon Cooperative Fish and Wildlife Research Unit
Mark	Morasch	
Ian	Courter	Cramer Fish Sciences
Shadia	Duery	Cramer Fish Sciences
Rebecca	McCoun	The Confederated Tribes of the Grand Ronde, Natural Resources Division

Title

Where the Wild Things Are: Patterns and Motives in Migration and Habitat Use in Pacific Lamprey in the Willamette Basin

Abstract

ABSTRACT.— Pacific lamprey, Entosphenus tridentatus, are declining precipitously in abundance in the Pacific Northwest, and yet substantial information gaps remain on their migratory biology. This information is essential for informing conservation initiatives and delineating migration trends in the face of global climate change. We report on preliminary results from an ongoing study of the migration characteristics and habitat use of radio-tagged adult Pacific lamprey in the Willamette Basin, with a focus above Willamette Falls. Fish were tracked by boat throughout the mainstem above Willamette Falls and by fixed receiver sites throughout the basin. Preliminary results suggest that fish migration tended to show three migration patterns: 1) migrate to a site in the mainstem Willamette River and hold for extended periods of time; 2) migrate slowly within the mainstem Willamette; and 3) migrate quickly up into tributaries of the Willamette. Tagged fish migrated upstream to spawning areas during the springtime before stopping their migration during the summer, when mean daily temperatures in the lower river were > 20 oC. Some fish began moving again during the fall. Although fish were distributed throughout the basin, most fish were found between river miles 28 and 90, many of which were in the deep, slow-moving Newberg pool. Habitat characteristics were measured on 135 fish out of the 300 tagged fish that were released. Our preliminary results suggest that holding habitat may often, but not always, be associated with deep pools.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

DAVID	CLUGSTON	CORPS OF ENGINEERS	DAVID.A.CLUGSTON@USAC

Presenting Paper *Student: False*

Co-Authors

Title

Improving Passage with Conflicting Needs and Status:Lamprey and Salmon

Abstract

Concerns over the the diminishing numbers of Pacific lamprey in the Columbia Basin has resulted in a new additional focus for passage improvements at dams. Making creative changes to how dams are operated and configured based on the behavior and swimming abilities of lamprey without harming ESA listed salmon and steelhead is the ultimate goal. Because of the vast difference between salmon and lamprey this is not always easy to do. Getting salmon biologist, salmon criteria based fishway designers, and engineers to embrace adding features with conflicting criteria needs for lamprey has taken time and energy but it is a critical and necessary step in improving the chances of recovering lamprey in the Columbia River Basin. We need to know enough about lamprey behavior and the effects of current structures and operations to know what to design for, need to create new acceptable criteria that embrace all species, evaluate the effectiveness of new designs, and implement them as widely as possible. The learning curve is steep, the costs considerable, and time in many areas is limited. How well we can embrace the needs of very different but ecologically linked groups of fish will test how well we can meet the challenges of multispecies management.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Patrick	Connolly	US Geological Survey, Western Fisheries Research Center, Columbia River Research	pconnolly@usgs.gov

Presenting Paper *Student: False*

Co-Authors

Kyle	Martens	US Geological Survey, Western Fisheries Research Center, Columbia River Re Laboratory
Michael	Newsom	5038272840
Dana	Weigel	US Bureau of Reclamation

Title

Assessing limitations to life history diversity to help prioritize actions for restoring steelhead

Abstract

In Beaver Creek of the Methow River watershed in northcentral Washington, we tracked the fate of individual juvenile steelhead that expressed differing life history strategies. Movements of fish were monitored with the use of PIT tagging and a system of downstream traps and PIT tag interrogation systems. Several groups of fish were identified, including those that stayed in their natal area until smolting and those that moved downstream to the mainstem Methow for additional rearing before smolting. Rearing environments were much different for these groups of fish in terms of temperature, flow, lateral habitat, and potential predators. Our data suggest that exposure to the differing rearing environments has a decided influence on survival and smolt production. Modeling efforts have helped illustrate the potentially large benefits that could be gained from a concerted effort to improve rearing conditions for those juvenile fish that move to the mainstem Methow River a year or more prior to smolting. This information is helping to guide a major restoration effort in the mainstem Methow River that emphasizes enhancement of longitudinal and lateral connectivity to promote a more successful expression of a life history trajectory that involves rearing in non-natal and larger stream habitat.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Amy	Cook	Pacific States Marine Fisheries Commission	Amy.Cook@noaa.gov

Presenting Poster Student: False

Co-Authors

Richard	Ledgerwood	National Marine Fisheries Service
Robert	Magie	5038611818xt24
Matthew	Morris	Pacific States Marine Fisheries Commission

Title

Evolution of PIT tag detection systems used with a surface trawl in the Columbia River estuary

Abstract

Beginning in the 1980's, passive integrated transponder (PIT) tags were used to mark salmonids in the Columbia River Basin. In 1995, we began a multi-year study to evaluate migration timing and behavior of PIT-tagged juvenile salmonids (Oncorhynchus spp.) migrating through the Columbia River estuary. In 1998, we expanded our sampling in the estuary to complete the reach survival estimates through the entire Federal Columbia River Power System to the tailrace of Bonneville Dam and to evaluate survival to the estuary for fish released from transportation barges downstream of Bonneville Dam. Sampling was done primarily between river kilometers (rkm) 61-83 using a surface pair trawl to guide salmonids through a PIT-tag detection antenna attached to the cod end of the trawl. Annual detection totals ranged from 738 fish in 1996 to 23,247 fish in 2009. As PIT tag technology changed over time, antenna design has adapted, primarily to allow for longer read ranges of tags. In 2000, the basin wide change in PIT tag frequency from 400 kHz to 134.2 kHz provided significantly greater read ranges and improved detection equipment. This enabled fish passage openings to be enlarged resulting in increased flow through the antenna and decreased fish avoidance. This study has utilized a variety of detection systems to decode PIT tags. For example, in 1995 the study deployed a rectangular detection system which housed two fish passage tunnels 20 cm wide x 60 cm tall x 91 cm long. Subsequent designs evolved using cylindrical antennas with up to 122 cm diameter openings. Our largest antenna to date was deployed in 2009, consisting of two components of three 2.5 m wide x 3.0 m tall detection coils.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Trevan	Cornwell	Oregon Dept. of Fish and Wildlife	trevan.cornwell@oregonstate.edu

Presenting Poster Student: False

Co-Authors

Eric	Volk	Alaska Department of Fish and Game
Kim	Jones	5417574263
Daniel	Bottom	NOAA Fisheries, Northwest Fisheries Science Center
Charles	Simenstad	Wetland Ecosystem Team, School of Aquatic and Fishery Sciences, University Washington

Title

Diversity of Chinook salmon life histories in the Salmon River basin, Oregon

Abstract

We examined variations in the juvenile life history of fall-spawning Chinook salmon, Oncorhynchus tshawytscha, for evidence of change in occurrence and duration of estuarine residency and migration patterns following the removal of dikes from 145 ha of former salt marsh in the Salmon River estuary (Oregon). The absence of fry migrants in the estuary during April through June in 1975-77—a period that precedes restoration of any of the diked marshes—and the extensive use of marsh habitats by fry and fingerlings April–July, 2000-02 indicate that wetland restoration has increased estuarine rearing opportunities and breadth of residence for juvenile Chinook salmon. We used otolith daily increment counts and strontium:calcium ratios of juvenile Chinook to compare date and size at emigration from freshwater, growth, and estuarine residence with that obtained from mark-recapture field studies. More than 75% of fish captured at ocean emigration had entered the saline portion of the estuary during the summer, and two-thirds of those spent more than a month in the saline estuary before capture. Field sampling established that early migrating fry (<50 mm) were abundant in the upper saline estuary marsh habitats, but few were found at the mouth of the estuary. Nonetheless, otolith reconstruction revealed that 17% of the ocean emigrants from Salmon River in 2000-02 had entered the estuary as fry. Moreover, all juvenile life history types contributed to the adult salmon population, including fry migrants, which accounted for >30% of all spawners in 2004. The field and otolith results suggest that wetland recovery has expanded life history variation of Chinook in the Salmon River population by allowing greater expression of estuarine-resident behaviors. The contributions of different segments of the adult population and diverse life history strategies of the juvenile Chinook may increase the resilience of the population to disturbance and natural climate cycles.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Ian	Courter	Cramer Fish Sciences	courter@fishsciences.net

Presenting Paper *Student: False*

Co-Authors

Chris	Frederiksen	
Mark	Teply	Cramer Fish Sciences
Steve	Cramer	Cramer Fish Sciences
Gabe	Temple	

Title

Influence of resident rainbow trout on abundance of sympatric steelhead in the Upper Yakima Basin

Abstract

Eleven Distinct Population Segments of steelhead have been listed under the U.S. Endangered Species Act along the Pacific Coast, while robust populations of sympatric resident rainbow trout persist in many of these streams. We explored the interdependence of anadromous and resident Oncorhynchus mykiss life-histories using a life-cycle model. Stock-recruitment and life-history parameters were estimated from an extended time series of O. mykiss sampling in the Upper Yakima Basin, Washington. Recruitment between age classes residing in freshwater showed strong density dependence. Rates of interbreeding between types, and the proportion of offspring that became resident or anadromous from each parental cross were estimated from experiments conducted in the Yakima River, Grande Ronde River, Oregon and Sashin Creek, Alaska. Mean abundance of steelhead and rainbow trout predicted by the model were similar to estimates from field studies. The sympatric population model also provided better predictions of fluctuations in steelhead abundance compared to a model that assumed no smolt production from resident female spawners. Thus, smolt contributions from resident rainbow trout populations may strongly influence viability of the anadromous life-history form. We recommend further study of anadromous fish production from resident rainbow trout as a potentially important driver of steelhead persistence during periods of low marine survival.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Ian	Courter	Cramer Fish Sciences	courter@fishsciences.net

Presenting Paper *Student: False*

Co-Authors

Steve	Cramer	Cramer Fish Sciences
Mark	Teply	3604564621
Kris	Jones	Cramer Fish Sciences
Mike	Deas	Watercourse Engineering, Inc.

Title

Effects of flow augmentation and meteorological conditions on coho salmon production in the Klamath River basin

Abstract

It has been hypothesized that water project operations in the Klamath River basin are a major driver of anadromous fish production. Moreover, fisheries interests have been strong advocates for mainstem flow augmentation as an important means of increasing abundance of threatened coho salmon. For this reason there was a sincere desire to understand effects of flow and temperature conditions on coho salmon production. Due to the paucity of data in the Basin, a simulation approach was required. We sought to quantify the effects of flow alterations at Iron Gate Dam on coho production in the Lower Klamath River through population life-cycle modeling. For comparison, we also quantified water year-type (wet, moderate and dry) effects on coho. The functional relationships between environmental conditions and coho survival were incorporated into a detailed population model, which was used in conjunction with a hydrodynamic model and water operations model to predict freshwater production of juvenile coho outmigrants. Results suggest that changes in IGD discharge have a limited effect on coho salmon production relative to effects of meteorological conditions. The influence of IGD discharge on mainstem flow and temperature conditions diminishes rapidly downstream due to flow accretion from tributary sources. Furthermore, the majority of juvenile coho production occurs in tributary habitats where temperatures are cooler and velocities more suited for rearing. Proposed changes in river management for fisheries restoration purposes should be viewed within a complete life-cycle context, and the effect of river discharge should be quantified in a spatially and temporally explicit manner to properly predict the expected magnitude of fisheries benefit associated with a change in water project operations.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Chuck Coutant Coutant Aquatics ccoutant3@comcast.net

Presenting Paper *Student: False*

Co-Authors

Title

Flow Velocity Enhancement System - Analysis of Smolt Guidance in the Cowlitz River, Summer 2008

Abstract

Juvenile salmon evolved to follow river currents downstream during outmigration. Slack-water areas at dams remove these migratory cues. Flows to water diversions can misdirect migrants to hazardous areas. Perhaps induced currents can aid juvenile salmonids to safe migration routes or collection devices. A hydraulic system (FVES) generates water currents with turbulence similar to natural streams. Field tests confirmed that smolts would orient to and follow induced currents. This technology was further tested in 2008 with funding from Bonneville Power Administration.

Two-dimensional acoustic telemetry, which provides detailed detection history of each fish that passes within the detection array, was used to evaluate how juvenile Chinook salmon respond to induced flow in the Cowlitz River. Ninety smolts were implanted with acoustic transmitters and released in the tailrace of Cowlitz Falls Dam in groups of 9 per day during a 10-d period in July. The FVES was operated on a rotating schedule to compare natural and guided migration trajectories. An acoustic detection array was positioned to detect fish in the vicinity of the FVES-generated plume. This presentation provides results of track visualization and statistical comparisons of smolt locations.

River flows varied during the tests with most fish tracks recorded when river flow was slack or circa 1.5 fps downstream. Most tracked fish responded to the FVES plume by remaining in or near it longer than other fish in the same zone when the FVES was off ($P<0.0001$). More fish entered the plume multiple times and exhibited milling behavior when the FVES was on than when it was off. A majority of smolts passed through or lingered in the plume about 100 ft from the FVES when it was operating (but not at this location when off). This appears to be a favorable location to attempt to capture or divert smolts with the FVES.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jim	Coyle	Oregon Department of Environmental Quality	coyle.jim@deq.state.or.us

Presenting Paper *Student: False*

Co-Authors

Ades	Dennis	Oregon Department of Environmental Quality
Allen	Hamel	5036935727
Pillsbury	Lori	Oregon Department of Environmental Quality

Title

2008 Findings of Oregon DEQ's Toxics Monitoring in the Willamette River Basin

Abstract

In 2007 Oregon's Department of Environmental Quality (DEQ) initiated a long-term monitoring program to document the occurrence of toxic pollutants in the state's surface waters. The program is part of a more comprehensive strategy to target and reduce concentrations of toxic contaminants in Oregon's water, air and land in order to protect human and environmental health.

DEQ collected water samples from 20 sites in the Willamette River Basin including seven on the mainstem and 13 on select tributaries during the fall and winter of 2008. Water samples were analyzed for over 270 organic contaminants including current use pesticides, solvents, pharmaceutical and personal care products. DEQ also collected and analyzed water samples at 40 locations in 2008 and analyzed them for a broad suite of metals. Resident fish were collected at five mainstem and seven tributary locations and fillets analyzed for bioaccumulative organic contaminants and elemental mercury.

Herbicides were the most common class of pesticides detected in water samples. A variety of pharmaceutical compounds were detected at low concentrations and cholesterol and coprostanol, (fecal indicators) were widely detected. Copper and lead were found at concentrations above Oregon's criteria for the protection of aquatic life.

Persistent, bioaccumulative toxic pollutants were found in composited fish fillet samples collected at all 12 collection sites, including polychlorinated biphenyls, dioxins and furans, polybrominated diphenyl ethers (flame retardants) and the legacy insecticide DDT. Average mercury concentrations in fillets exceeded established screening levels for subsistence fishers and often exceeded 0.35 mg/kg, the threshold value used by the Oregon Department of Human Services to issue fish consumption advisories.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Alison	Dauble	Oregon State University, Dept. of Fisheries and Wildlife	daublea@onid.orst.edu

Presenting Paper *Student: True*

Co-Authors

Scott	Heppell	Oregon State University, Dept. of Fisheries and Wildlife

Title

Juvenile Rockfish Settlement in Oregon Estuaries

Abstract

In the Pacific Northwest, many species of rockfishes (Sebastes spp.) are under extreme conservation measures due to low population levels. One species of interest is the black rockfish (S. melanops), which is possibly estuarine dependent during its early life history stages and constitutes a large portion of the recreational harvest in the Pacific Northwest, as well as being a commercially fished species. Annual recruitment in rockfishes has been shown to be extremely variable and a better understanding of the factors behind successful recruitment would assist in prioritizing conservation efforts for this and other species. The overall goal of my study was to investigate the role that natural and anthropogenic influences play in the estuarine recruitment dynamics of northeast Pacific rockfishes, using black rockfish as the primary study species. Initial results from trapping surveys indicate that juvenile black rockfish utilize multiple estuaries on the Oregon coast for variable portions of the year, and may reside in some estuaries through their first winter before moving to deeper habitats. There also appears to be more juveniles captured in the more developed estuaries on the coast, indicating that the presence of structure is an important component to the settlement process in this species. Two years of dive surveys on artificial reef structures in Yaquina Bay show that a settlement index of juvenile rockfish within the estuary could reflect larger trends in the juvenile population and has shown that habitat saturation may be a factor that could affect the settlement process. This study has provided further understanding of what is “essential fish habitat” for rockfish in the Pacific Northwest and has set the groundwork for investigating interannual variation in rockfish recruitment.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michael	Deas	Watercourse Engineering, Inc.	mike.deas@watercourseinc.com

Presenting Paper *Student: False*

Co-Authors

Title

Thermal Diversity in the Klamath River basin – Management Implications

Abstract

The Klamath River is a large basin, with complex geology, geography, hydrology, and meteorology. Coupled with over a century of water resources development, these factors lead to a wide range of water temperature conditions throughout the basin that provide valuable thermal diversity for anadromous fish in a system that is seasonally thermally challenged. Thermal conditions can be adverse for anadromous fish from April into October, but these conditions are not necessarily uniformly adverse throughout the basin. Further, cold water regions occur throughout the basin that provide refuge for anadromous fish, including springs, cold water tributaries, groundwater/hyporheic exchange, and other features that create water temperatures that provide systematically cooler temperatures than adjacent habitats. Characterizing thermal diversity, seasonal variability, and benefits to anadromous fish are important aspects of anadromous fish restoration and management efforts, particularly for fish with over-summering life stages or fish migrating through the Klamath River in the late spring and early fall. Climate change poses a further challenge to the Klamath Basin regarding potential reduction in thermal diversity and loss of persistent over-summer cold water habitats. Coordination of current restoration and management strategies of thermal diversity would provide clear benefits in prioritizing actions and scheduling restoration actions.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Mike	Donnellan	Oregon Department of Fish and Wildlife	Michael.D.Donnellan@state.or.u

Presenting Paper *Student: False*

Co-Authors

Bill	Miller	Oregon Department of Fish and Wildlife
Arlene	Merems	Oregon Department of Fish and Wildlife
Dave	Fox	Oregon Department of Fish and Wildlife

Title

Marine fish and habitat studies of Oregon's nearshore reefs using a Remotely Operated Vehicle

Abstract

The Oregon Department of Fish and Wildlife (ODFW) has been using an inspection class Remotely Operated Vehicle (ROV) for research and resource management in nearshore marine habitats since 2000. ODFW's ROV is a Phantom HD2+2 made by Deep Ocean Engineering that is capable of operating at depths of up to 305 m, although we typically operate it in the 20-150 m depth range. The ROV is currently outfitted with 3 video cameras (including a high-definition camera), two 200 watt HMI lights, two 44 watt LED lights, two pairs of 5 mW parallel lasers, and a ranging altimeter. To date, ODFW has surveyed marine fishes and habitat offshore of Port Orford, Cape Blanco, Cape Perpetua, Cape Foulweather, and Lincoln City, as well as a deep-water survey of Nehalem Bank. Using the ROV, we acquired the first seafloor images of the now-persistent "dead zone" that first developed in Oregon during 2002. We have been and will continue to annually monitor this seasonally hypoxic/anoxic area with the ROV to document continuing hypoxia-induced disturbance and recovery of benthic communities. Beginning in 2008, we have been using the ROV to collect baseline information on the distribution and abundance of benthic communities in proposed and newly-established Marine Protected Areas (MPAs). These data (in part) will be used to test the effectiveness of these MPAs at achieving conservation goals and to determine the effects of traditional management approaches outside MPA boundaries. Another major goal of our ROV work is to develop a robust statistical model of species-specific habitat associations of benthic fishes for the purpose of habitat-based stock assessment and predictive modeling of distribution and abundance. Lastly, we have used the ROV for targeted research questions such as assessing the impact of bottom trawling in soft-bottom habitats in the vicinity of Nehalem Bank.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Shadia	Duery	Cramer Fish Sciences	shadiad@fishsciences.net

Presenting Paper *Student: False*

Co-Authors

Ian	Courter	Cramer Fish Sciences
Chris	Peery	Cramer Fish Sciences
Mark	Morasch	Cramer Fish Sciences
Benjamin J.	Clemens	Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries a Wildlife, U. S. Geological Survey
Tiia	Workman	Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries a Wildlife, U. S. Geological Survey
Rebecca	McCoun	The Confederated Tribes of the Grand Ronde, Natural Resources Division

Title

Pre-spawning migration behavior and distribution of Pacific lamprey in the Willamette Basin

Abstract

Significant declines in Pacific lamprey (Lampetra tridentatatus) dam counts throughout the Columbia Basin have produced a mounting interest in lamprey population biology. Pacific lamprey possess the same charismatic, anadromous life-history strategy that is well documented in salmon and steelhead populations. These cold water fish start their upstream migration as adults in early spring and spawn approximately one year later. They appear to prefer tributary habitats for spawning, but patterns in their pre-spawning migratory movements and holding habitat preferences are not well documented. The Willamette Basin was chosen to conduct a study on lamprey migration behavior and spawning distribution. From May till August 2009 over 150 adult Pacific lampreys were radio-tagged and released near Willamette Falls. Nineteen fixed receiver sites located throughout the main stem and major tributaries of the Willamette River were used to track fish movements. From release until December 2009, tagged lamprey expressed a variety of behaviors, ranging from immediate movement into tributaries to limited movement within the main stem. Greater than 75% of the fish spent a significant portion of the summer and fall between Willamette Falls (RM 26.5) and Buena Vista Park (RM 107). Water temperature may have been an important limiting factor for lamprey movement. Detections at our receiver sites ceased when mid-Willamette mainstem temperatures peaked at 26oC. During pre-spawning migration, lamprey appear to congregate in deep water reaches of the main stem, before migrating into tributaries. Further identification and characterization of freshwater habitat utilized by migrating adult Pacific lamprey could be critical to sustaining populations throughout the Pacific Northwest.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jason	Dunham	U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center jdunham@usgs.gov

Presenting Poster Student: False

Co-Authors

Steven	Clark	U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center
Robert	Hoffman	
David	Hockman-Wert	U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center
Sam	Brenkman	Olympic National Park

Title

Fish occupancy, thermal regimes, and geomorphology of the Elwha River prior to dam removals

Abstract

The Elwha River ecosystem has been fragmented for nearly a century by two major dams that are scheduled for removal beginning in 2012. In anticipation of this, we have been monitoring fishes with a focus on native bull trout and nonnative brook trout. Study sites within the system include locations below both dams, between the dams, and upstream of dams. Sampling has involved electrofishing and day snorkeling. Within each reach, the river supports a diverse array of habitats that include mainstem and tributaries, fluvial and parafluvial floodplain channels, and isolated off-channel habitats. These habitats are being characterized with LiDAR (light detection and ranging) imagery to provide a quantitative description of habitat types based on high-resolution channel morphology. Fish surveys in 2009 covered 59 sites sampled with repeat surveys to estimate probability of occupancy as well as detection. Preliminary results indicate variable patterns of both. Native bull trout and nonnative brook trout in particular can be difficult to detect via snorkeling, especially for smaller (<150 mm) size classes (probability of detection, $p < 0.50$). Juveniles of these species appear more common in floodplain habitats, where electrofishing can be used for sampling, yielding higher detectability ($p > 0.80$). In contrast, rainbow trout were present in all habitats surveyed and easily detected ($p > 0.90$). In addition to fish, we have deployed an array of 95 digital thermographs to quantify full-year thermal regimes within identified habitat types. Data from these thermographs will be used to predict occurrence of fishes, and will be linked to floodplain geomorphology. Preliminary surveys indicate a high degree of variability in temperatures among tributaries and floodplain habitats in the Elwha River basin. Linkages between fish, thermal regimes, and geomorphology will establish a solid baseline for monitoring and evaluating changes to the river system in response to dam removal.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jason	Dunham	U.S. Geological Survey, Forest and Rangelandjdunham@usgs.gov Ecosystem Science Center

Presenting Paper *Student: False*

Co-Authors

Doug	Bateman	Oregon State University
David	Hockman-Wert	
Nate	Chelgren	U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center
David	Leer	Oregon State University
Steve	Clark	Oregon State University

Title

Spatial and temporal variability in the demography of coastal cutthroat trout in the Trask Watershed Study

Abstract

The Trask Watershed Study seeks to evaluate the potential impacts of contemporary forestry practices on fish and other aquatic ecosystem responses in northwest Oregon. We have focused on intensive monitoring of coastal cutthroat trout and demographic processes during late summer low flows. In 2006 we evaluated the efficiency of sampling to determine abundance, and the distribution of fishes within the system. Following that year we have quantified abundance, survival, immigration, emigration, recruitment, and individual growth at four sites located directly downstream of catchments scheduled to receive forestry treatments in 2011-12. Work in 2006 identified biases of single-pass and removal methods to estimate fish abundance. Intensive annual monitoring since 2007 suggests a consistent pattern of spatial variability in demographic processes, and the importance of growth, survival, and recruitment as key processes. Recruitment in particular appears sensitive to annual variability, perhaps linked to influences of climate. Localized movement (immigration and emigration) appears to be less important, at least during summer low flows. Overall our results point to the value of assessing measurement error and considering multiple demographic processes in the design and implementation of monitoring to evaluate the responses of fish to management. Additional monitoring in 2010 will largely conclude our effort to establish a pre-treatment baseline for evaluation of forestry impacts in the Trask Watershed Study. This foundation of field observation, combined with more detailed observational, experimental, and modeling studies that accompany this work provide the framework for identifying and evaluating patterns and likely processes that drive fish population dynamics.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jason Dunham U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center jdunham@usgs.gov

Presenting Poster Student: False

Co-Authors

Title

Thermal regimes in Oregon streams: spatial variation in climate impacts and biotic responses

Abstract

Water temperature is a key variable influencing freshwater biota and ecosystem processes. It is also a major factor influenced by past and present human activity, and a major concern in the context of future impacts linked to climate change. In spite of the fundamental importance of water temperature, our understanding of this key ecosystem process is limited by lack of information on annual thermal regimes. By "regimes" we refer to patterns in the magnitude, timing, duration, frequency, and predictability of events. Most water temperature data are available for short periods during summer and linked to efforts focused on measuring seasonal maximums. These data do not allow for an understanding of a host of characteristics of freshwaters that can be critical for stream biota and evaluation of changes in space or time. To address this major gap, we have launched an effort to quantify annual thermal regimes in sites across Oregon. Our goals are to identify characteristics of regimes and climate-sensitive properties of freshwaters. We expect the diverse geologic, climatic, and topographic characteristics of catchments will reveal strong variation in the sensitivity of streams to impacts from climate change and identify key opportunities for climate adaptation. A better understanding of how species respond to annual regimes, not just annual maximums, will help to refine and focus management. By changing the view to encompass a complete assessment of thermal regimes, our view of past, present, and future impacts to water temperature in freshwaters will be greatly improved. To date our effort will include >200 locations across Oregon with full annual regimes quantified, almost exclusively in streams. We are currently seeking additional collaborations and partnerships to substantially increase this effort.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Demian Ebert PBS&J daebert@pbsj.com

Presenting Poster Student: False

Co-Authors

Mike Rotar PBS&J

Title

Sevenmile Fish Passage Improvement Project

Abstract

The purpose of the project was to provide for fish passage around an agricultural diversion structure on Sevenmile Creek, located in the Upper Klamath Basin of southern Oregon. The diversion seasonally blocked up and downstream movement of fish. To provide passage, a natural roughened channel was constructed adjacent to the existing channel while maintaining access and function of existing irrigation ditches.

The superstructure of the diversion structure itself was removed but sheet pile on the banks and an instream support bar remained to support the banks and bed and prevent migration of the downstream head cut. A rock weir was constructed in the channel immediately upstream of the existing diversion structure to maintain water elevations for continued irrigation. A second rock weir was constructed across the main channel just above where the roughened channel returns to guide migrating fish to the roughened channel and provide additional grade control.

The project facilitates movement of redband trout (Oncorhynchus mykiss newberrii) and brown trout (Salmo trutta) during irrigation season. It also allows for upstream and downstream movement of the endangered Lost River (Deltistes luxatus) and shortnose suckers (Chasmistes brevirostris) should they colonize Sevenmile Creek.

According to fish passage criteria, no jumps or steps are allowed in structures designed for passage of suckers. A pool and chute fishway, or Denil ladder, was a potential option, however the landowner would not support a structure that required a concrete or steel. Therefore, a roughened by-pass channel was designed, because it had the highest likelihood of success, the highest aesthetic appeal, could accommodate the inherent variability of flows, and could meet fish passage criteria. The project was constructed in fall of 2008. Measurements taken in the roughened channel immediately following construction confirmed that fish passage design criteria were being met.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Mary	Edwards	Professional Photographer	marye57@eoni.com

Presenting Paper *Student: False*

Co-Authors

Title

Postcards from the Edge… Fish Addiction: How to Recognize the Signs and related Paraphernalia before your Hooked and Bleeding Death on the Cutting Edge of Photographic Technology

Abstract

This presentation will document the descent of a fisheries biologist into the Gaussian Blur of rivers and streams populated by juvenile delinquents, wild adults, Sculpins with attitude and Ikelite dealers lurking at the deep end of your pocket book.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Mary	Edwards	Nez Perce Tribe Fisheries, Research Division	marye@nezperce.org

Presenting Poster Student: False

Co-Authors

Leslie	Lindsay	Oregon Department of Fish and Wildlife
Tim	Hoffnagle	Oregon Department of Fish and Wildlife

Title

Use of Membrane Filtration Florescent Antibody Test (MF-FAT) to Identify Renibacterium salmoninarum within Eggs of Sexually Mature Female Chinook Salmon: An Attempt to Establish Correlative Relationships between Detection of Bacteria in the Eggs, Ovar

Abstract

The question of whether a female salmon that is positive for Renibacterium salmoninarum (Rs, the causative agent of bacterial kidney disease, BKD) by enzyme-linked immunosorbent assay (ELISA) has passed the infection to her offspring through vertical transmission is the 64 million dollar question. This question is further complicated when culling decisions for offspring involve programs where gene conservation and preservation of a threatened stock are the priority, such as the Grande Ronde Basin Spring Chinook Captive Broodstock Program. While ELISA is highly sensitive in detecting the presence of Rs antigen in kidney tissue, it does not document the actual presence of the bacterium or distinguish between actively infected fish versus one that was previously exposed, mounted a successful immune response and cleared the infection. We collected samples of 30 eggs and 2 mL of ovarian fluid from 103 mature female Chinook salmon at the time of spawning. We used the Elliot and McKibben membrane filtration fluorescent antibody test(MF-FAT)protocol to count Rs cells in the eggs and ovarian fluid. Kidney samples were also collected and processed by ELISA. Identification of Rs within the eggs and ovarian fluid was successful using this protocol, however bacterial cell concentration for eggs did not correlate well to bacterial cell concentration in ovarian fluid (r=0.3265) or with ELISA (r=0.2429). Bacterial cell concentration in ovarian fluid provided a slightly better correlation with ELISA (r=0.4324). Detection of high numbers of bacteria in the ovarian fluid by MF-FAT was not predictive of egg cell infection: some females with low ELISA values (<0.2) were identified with high numbers of bacteria in their ovarian fluid and conversely females with high ELISA values (>0.8) had low bacteria counts for their ovarian fluid or egg contents. This technique may not be applicable for refining culling practices in gene conservation programs.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kami	Ellingson	Siuslaw National Forest	kellingson@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Title

Restoring the Salmon River Estuary

Abstract

The Salmon River estuary is a relatively undeveloped estuary on the Oregon coast, although it has a long history of human use. Between 1945 and 1974, most of the estuary had been damed and ditched to create pasture. In 1977, Congress established this area as the Cascade Head Scenic Research Area. Direction for the Scenic Research Area encourages scientific study while promoting restoration and preventing development. Land acquisition by the Forest Service began across the estuary in 1977. In 1980 the entire area was designated a Biosphere Reserve as part of the United Nations Biosphere Reserve system. The Forest Service restored intertidal marsh in 1978, 1987 and 1996, resulting in 42%of the previously altered wetlands, restored to tidal marsh. Interest and funding generated in 2006 resulted in continued restoration targeting both a former trailer park development and former amusement park, both built on the marsh floor. Tamara Quays, a trailer park development built in 1968, peaked in the early 1970's with 100 trailer sites and 47 occupied sites. The Forest Service acquired the last parcel of this development in 2003 the site infrastructure was dismantled and removed over a 2 year period. By September of 2009 all fill placed on the marsh surface as part of the development was removed and the former marsh elevation recovered. A series of tidegates in place to provide flood control were removed in the summer of 2009. The Restoration of this tidal marsh removed all drainage/tidal restrictions, reconnecting Rowdy Creek to the estuary and restoring tidal inundation to all historic marsh surfaces/channels where the residential development had been. Planning is complete and restoration will begin summer 2010 in the former amusement park area also built on the marsh floor, protected by dams and tidegates to regulate tidal and freshwater flow.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Tony	Faast	U.S. Fish and Wildflower Service	tony_faast@fws.gov

Presenting Paper *Student: False*

Co-Authors

Title

Facilitating Collaborative Conservation

Abstract

Collaboration seems to be the "losers bracket" of public participation these days. If we could accomplish our fish management goals by ourselves ... we probably would just do it...but now days we must collaborate with multiple partners.

These resource management partners bring money, equipment, people-power, expertise, and enthusiasm to our efforts, but they also bring complications that can stall out a good project! The author provides a strategic framework and collaborative tools to achieving success with our plans, partners,and programs.

Ethics, momentum, closure form the basis for sucessful muli-party project implementation, along with good advice for what do do when problems arise.

Learn what it takes to be successful when collaborating with others in managing our fish resources!

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Jeff	Falke	NOAA-Fisheries	jeffrey.falke@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Kris	McNyset	NOAA-Fisheries
Chris	Jordan	5417544629

Title

Development of a water temperature model to predict life-history expression and production of Onchorhynchus mykiss in the John Da River basin, Oregon

Abstract

Populations of steelhead, the anadromous form of Oncorhynchus mykiss, have declined precipitously in the past two decades, resulting in listing under the federal Endangered Species Act across a large portion of its range. Confounding recovery, considerable uncertainty exists regarding the interaction between stable populations of the resident life-history form (i.e., rainbow trout) and threatened anadromous steelhead. In many locations the two forms are sympatric and one form may give rise to the other. Historically, the two forms have been managed separately, yet recent research shows that populations with high life-history diversity are both more productive and resilient to perturbation. The decision to migrate or stay in freshwater may be influenced by gender and be a flexible response to variable environmental conditions. Therefore, recovery of steelhead will require an increased knowledge of the physical and biological processes that influence expression of life history in O.mykiss. Water temperature is a key control on growth and survival of fishes and ultimately influences life-history expression. As such, an important first step is understanding natural variation in thermal conditions across the broad spatial scales at which O.mykiss carries out its life-history. The focus of our current research is to develop a spatially explicit, continuous water temperature model for the John Day River basin in eastern Oregon, based upon an extensive database of water temperature observations collected across 20 years. The model is parameterized using remotely sensed land-surface temperatures, precipitation, runoff, and physical aspects such as stream size, catchment area and gradient. Ultimately this modeling will contribute to our goal of predicting life history expression and production of O.mykiss in the John Day and assist in developing an analytical framework useful for managers to evaluate conservation and management actions aimed at increasing juvenile steelhead production.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Shahab Farzanegan Oregon Department of Fish and Wildlife shahab.farzanegan@state.or.us

Presenting Poster Student: False

Co-Authors

Title

ODFW Aquatic and Angler Education Program, a new look at reaching youth

Abstract

For the last 15 years, the ODFW Angling and Aquatic Education(AAE) has provided program development and delivery of angling skills, ethical fishing behavior and water safety skills, as well as the introduction of aquatic ecosystems to youth ages 10-15. The objectives of these classes are to introduce the sport of angling (including introduction to equipment, knot tying, casting, water safety, etc.), raise the understanding of the aquatic systems that fish live in and the importance these systems have to the sport of angling. Other important objectives are to raise the concept of personal responsibilities as users and stewards of aquatic resources, raise knowledge of the role regulations play in fisheries management and make it easier for anglers to use the regulations, and raise awareness of community based aquatic resources.

The AAE program also provides introduction of angling to youth and families from underrepresented populations. Progress toward this goal is achieved through implementation of the Becoming an Outdoors Woman program, Free Fishing Weekend, workshops/ classes for children of underrepresented and low income groups, and partnerships with urban schools and organizations. Overall, these efforts have been successful at introducing hundreds of thousands of youth to the joys of angling.

As our society and population demographics change, so must our methods of outreach. Come find out about the new directions and initiatives of the ODFW Aquatic and Angler Education program.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Scott	Favrot	ODFW	sfavrot@eou.edu

Presenting Poster Student: False

Co-Authors

Kyle	Bratcher	ODFW
Brian	Alfonse	ODFW
Brian	Jonasson	ODFW
Rich	Carmichael	ODFW

Title

Identification and Characterization of Overwinter Rearing Habitat of Juvenile Spring Chinook Salmon in the Grande Ronde Valley: T Initial Stages of a Collaborative Effort

Abstract

Management and restoration of spring Chinook salmon overwintering habitat within natal and rearing streams of the Grande Ronde River Basin require life history knowledge pertaining to spatiotemporal occupancy and critical habitat. We were approached by the Bureau of Reclamation (BOR) during 2009 and asked to develop and execute a research project with the objective of identifying overwintering reaches within the Grande Ronde Valley for wild juvenile spring Chinook salmon as part of a BOR overwintering habitat restoration initiative. Radiotelemetry techniques were selected to yield high resolution occupancy data and microhabitat use. Fish were collected using a rotary screw trap and implanted with a coded radio-tag from mid-October to early-December. Fish relocations were obtained using both mobile tracking techniques and stationary receivers. Efforts were made to relocate each fish once a week, and microhabitat use was collected for 30 randomly selected fish per week. By incorporating microhabitat use and availability data, overwintering microhabitat suitability can be calculated. Microhabitat suitability in conjunction with specific reach occupancy data can guide BOR in tailoring habitat restoration efforts toward specific reaches, while implementing restoration techniques designed to provide optimal (i.e., most suitable) overwintering microhabitats. Preliminary results indicate radio-tagged 90-105 mm wild juvenile spring Chinook salmon occupy the same habitat as non-tagged fish. Radio-tagged fish have been relocated from rkm 23 to rkm 66. Juvenile spring Chinook salmon generally selected slow currents and coarse substrates near cover. Occupancy of reaches impounded by diversion dams was high; however, these reaches were abandoned following diversion removal. This research is a collaborative effort designed to identify and characterize critical overwintering habitat of wild juvenile spring Chinook salmon to guide habitat restoration efforts intended to increase overwinter survival and carrying capacity within the Grande Ronde Valley.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Joseph	Feldhaus	Oregon Department of Fish and Wildlife	joseph.feldhaus@eou.edu

Presenting Paper *Student: False*

Co-Authors

Tim Hoffnagle

Title

Juvenile Survival, Smolt-to-Adult Return Rates, and Run Timing of Hatchery Spring Chinook Salmon in Two Northeast Oregon Strea

Abstract

We examined survival of hatchery juvenile spring Chinook tagged with a passive integrated transponder (PIT) to Lower Granite Dam (LGD) and subsequent adult detections at LGD to determine if smolt-to-adult return (SAR) rates calculated from PIT tagged Chinook were predictive of actual SAR rates. PIT tags have been placed into juvenile Chinook from the Imnaha River and Catherine Creek since the 1995 and 1998 brood years, respectively. We examined 10 complete brood year returns from the Imnaha River and six complete brood year returns for Catherine Creek. Juvenile Chinook from the Imnaha River and Catherine Creek arrive at LGD between late March and early July. For both the Imnaha River and Catherine Creek, juvenile survival to LGD was not a significant predictor of SAR ($P > 0.20$). Adult PIT tag detections at LGD indicate approximately 50% of returning age 4-5 hatchery adults to the Imnaha River pass over LGD in late May, with the median return time six weeks later than returning Catherine Creek adults. For both streams, age 3 adults return later than age 4-5 adults. SAR rates calculated using PIT tag returns over LGD were significantly correlated with the mark-recapture SAR method for the Imnaha River ($P = 0.003$) and Catherine Creek ($P = 0.008$). PIT tag SAR rates were lower than SAR rates calculated using the mark-recapture method from 9 of 10 years for the Imnaha River and all six brood years from Catherine Creek. PIT tag detections of adults at LGD can be used to examine stock specific run timing differences over LGD and may be appropriate for calculating SAR to streams where it is not possible to conduct a mark-recapture population estimate.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jayde	Ferguson	Oregon State University, Dept. Microbiology	fergusoj@onid.orst.edu

Presenting Paper *Student: True*

Co-Authors

Jeremy	Romer	Oregon State University, Dept. Fisheries & Wildlife
Schreck	Carl	541 737 1961
Michael	Kent	Oregon State University, Dept. Microbiology

Title

Impacts of multiple parasite species infection on Oregon Coastal juvenile coho salmon (Oncorhynchus kisutch)

Abstract

Understanding the limiting factors for freshwater survival of wild coho salmon (Oncorhynchus kisutch) in Oregon is crucial in managing wild populations. The role of chronic parasite infections in survival has not been addressed. We are investigating the impacts of multiple parasite species on Oregon Coastal coho. Our aims include: 1) determine the identity and distribution of parasites in these fish, and 2) evaluate the impacts of these infections on fish health. We routinely detect metacercarial stages of digenean trematodes and pseudocysts of myxozoans in coho from West Fork Smith River (WFSR). We have found that fish from the Lower Mainstem (LMS) have very heavy infections (up to 4,000 metacercariae/fish) compared to fish from the Upper Mainstem (UMS) (up to 400/fish). We have proven that these parasites persist throughout the juvenile phase of these fish, which is important because declines in parasite abundance in host populations indicate parasite associated mortality. Indeed, we have observed stark declines of up to 95% in these fish from parr to smolt stage. Previous studies at WFSR have shown that coho have poorer than expected parr to smolt survival in the LMS vs. the UMS. We hypothesize that this reduced survival is associated with high infection intensities. We evaluated this by assessing the impacts of these infections in fish captured from the LMS and UMS of WFSR held in the laboratory from parr stage to the typical time of smoltification for testing Na+ K+-gill ATPase activity, growth, and swimming stamina. The LMS fish had significantly lower swimming stamina than those from the UMS, when not adjusting for size. Certain parasites were negatively correlated with both growth, and swimming stamina. Also, Apophallus sp. (Digenea) was negatively correlated with ATPase activity. These results add support our hypothesis that heavily parasitized fish likely have poorer overwintering survival and smoltification.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Julie	Firman	Oregon Department of Fish and Wildlife	julie.firman@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Jeff	Rodgers	Oregon Department of Fish and Wildlife
Cathy	Kellon	5034670791

Title

Getting the word out in a digital age: A web application for serving and visualizing salmon data.

Abstract

Large-scale monitoring projects face unique challenges to reporting. Datasets are large and complex and often involve the contributions of many different people. The turnaround time for getting data ready for public consumption is short. Results need to be reported on a regular basis, at least annually, and because the data are used to make important policy decisions, they must be available in a timely manner. On the other end, many different entities are interested in using the data and need to know that they have the most up to date data available. Getting results from the hands of multiple people generating the information to multiple people who use the information and doing so in a regular and timely manner while maintaining the quality of the information continues to challenge most resource management agencies. In response to a specific data management and delivery need, the Oregon Department of Fish and Wildlife and Ecotrust have joined together to develop a web application that provides visualizations of data on salmon, and also serves up summary and raw data. In this talk we will provide a demonstration of a web tool that has been designed to provide access to critical salmon and aquatic habitat information and help management and recovery staff to efficiently and accurately report on progress in meeting conservation goals.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Michael	Flesher	Oregon Department of Fish and Wildlife	mflesher@eou.edu

Presenting Poster Student: False

Co-Authors

Lance	Clarke	Oregon Department of Fish and Wildlife
Shelby	Warren	Oregon Department of Fish and Wildlife
Richard	Carmichael	Oregon Department of Fish and Wildlife

Title

Survival and migration of summer steelhead derived from hatchery parents captured by angling in the Grande Ronde River

Abstract

Adult summer steelhead from a hatchery program in the Grande Ronde River basin in northeast Oregon stray at high rates into the Deschutes River. Adult migrating steelhead use cool Deschutes River flows as thermal refuge from warm summer flows in the Columbia River, a behavior that may encourage straying. We hypothesized that adults returning to the Grande Ronde River in autumn encounter cooler Columbia River water temperatures and stray less than individuals returning later in the migration season. To test this hypothesis we created a line of F1 offspring from hatchery steelhead collected by hook and line in the Grande Ronde River in autumn (hereafter referred to as the autumn line) and we compared their post-release performance to standard hatchery progeny released at the same location. Although stray rate data are not available, we estimated survival and migration timing using passive integrated transponder (PIT) tags. Outmigration travel time ranged widely between 10 and 33 days, but the averages for the two broodstock lines differed by only about 1 d. Survival to Lower Granite Dam ranged between 72% and 84%, but the average survival difference was less than 1%. Upstream migrating adults from the autumn line arrived at Bonneville Dam about one-week earlier than standard hatchery adults, and the difference in arrival date to upstream dams grew progressively larger. Average smolt-to-adult survival to Bonneville Dam was 33% higher for the autumn line than for standard hatchery groups, a difference that was statistically significant. Our results suggest that steelhead progeny from the autumn line return earlier as adults and survive at a higher rate than standard hatchery progeny. Future evaluations, through the F2 generation, will also compare adult stray rates and contribution to fisheries from the two broodstock lines.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Rebecca	Flitcroft	USDA Forest Service	becky.flitcroft@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Dana	Dedrick	Long Tom Watershed Council
Courtland	Smith	5417374515
Cynthia	Thieman	Long Tom Watershed Council
John	Bolte	Department of Biological and Ecological Engineering

Title

Social Infrastructure to Integrate Science and Practice: the Experience of the Long Tom Watershed Council

Abstract

Ecological problem solving requires a flexible social infrastructure that can incorporate scientific insights and adapt to changing conditions. As applied to watershed management, social infrastructure includes mechanisms to design, carry out, evaluate, and modify plans for resource protection or restoration. Without a well developed social infrastructure, efforts to apply the best science may fail to bring anticipated results. For the Long Tom Watershed Council, social infrastructure includes a management structure, membership, vision, priorities, partners, and resources. Further, the acquisition of scientific knowledge is directed toward communication and education of watershed residents thereby raising awareness of actions necessary to protect and restore the watershed. For the Long Tom Watershed Council, integrating science and practice is done by keeping science in the forefront of decision making, using data collection as an outreach opportunity, and in a novel subwatershed enhancement program that makes restoration deliberate and intentional rather than opportunistic. These methods have resulted in ecological leadership, restoration projects, and partnerships that catalyze landscape-level change.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Michael	Ford	Conservation Biology Division, Northwest Fisheries Science Center	Mike.Ford@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Kevin	Williamson	U.S. Fish & Wildlife Service, Abernathy Fish Technology Center
Andrew	Murdoch	
Todd	Pearsons	Grant County Public Utility District
Eric	Ward	Conservation Biology Division, Northwest Fisheries Science Center

Title

Factors influencing the relative fitness of hatchery and wild spring Chinook salmon in the Wenatchee River, Washington

Abstract

Understanding the relative fitness of naturally spawning hatchery fish and the causes of any fitness differences compared to wild fish has become an important issue in the management and conservation of salmonids throughout their range. We used a DNA-based parentage analysis to measure the relative reproductive success of hatchery- and natural-origin spring Chinook salmon in the natural environment. Size and age had a large influence on male fitness, with larger and older males producing more offspring than smaller or younger individuals. Size had a significant effect on female fitness, but the effect was smaller than the effect of size on male fitness. For both sexes, run time had a smaller but still significant effect on fitness, with earlier returning fish favored. Spawning location within the river had a significant effect on fitness for both males and females. On average hatchery-origin fish of both sexes produced about half the juvenile progeny per parent when spawning naturally than did natural origin fish. Hatchery fish tended to be younger and return to lower areas of the watershed than wild fish, and these factors explained some of their lower fitness compared to wild fish.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Alder Fuller Euglena Academy a.euglena@gmail.com

Presenting Paper *Student: False*

Co-Authors

Title

What we need to understand about our climate system: the role of negative and positive feedback processes

Abstract

Climatologists distinguish two types of climate change. Type I change characterized by gradual, smooth, linear trends; this is the type predicted by the Intergovernmental Panel on Climate Change (IPCC) and the mainstream media. Type II change is rapid, abrupt, and chaotic; ice core studies in Greenland and Antarctica clearly indicate type II has been the norm going back at least 700,000 years. For example, during the ice ages, the climate could change as much in a single decade as it has during the last 10,000 years. Speaking from a systems sciences perspective, I will explain why the climate change event beginning now will not only probably be type II, but also likely be the largest change to occur in the last 50 million years. Earth's climate system is regulated by a large number of negative and positive feedback processes. These processes include both abiotic processes - like polar ice albedo and ocean currents - and biotic processes, ranging from forests as carbon sinks to marine phytoplankton's role in cloud production and active carbon dioxide pump down (especially by coccolithophorids). All known processes are now shifting into positive feedback modes that accelerate trends, signaling the onset of abrupt, rapid, chaotic changes. I will explain scientist's current understand of these processes and address the often-ignored importance of ocean acidification and stratification which at 10C could prevent nutrient upwelling to the euphotic zone.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Sally	Gee	Oregon Department of Fish and Wildlife	sgee@eou.edu

Presenting Paper *Student: False*

Co-Authors

Timothy	Hoffnagle	Oregon Department of Fish and Wildlife
Linda	Rhodes	2068603279

Title

Comparison of Two Macrolide Antibiotics to Reduce Prespawn Mortality due to Bacterial Kidney Disease in Maturing Female Chino Salmon

Abstract

The Grande Ronde Basin Spring Chinook Salmon Captive Broodstock Program has a persistent problem with bacterial kidney disease (BKD). Antibiotics are given to immature salmon, as needed, to treat BKD outbreaks and to maturing salmon to prevent BKD and increase survival to spawning. Previously we showed that among maturing Chinook salmon (Oncorhynchus tshawytscha) injected with erythromycin in the dorsal sinus, females exhibited higher enzyme-linked immunosorbent assay (ELISA) values and higher antibiotic activity in the kidney than males. We also found no significant difference in ELISA value among maturing males receiving no injection (simulating “no treatment”) or prophylactic injections of azithromycin or erythromycin. We extended these observations by testing the ability of these prophylactic treatments to reduce BKD-related mortality in maturing females. When fish were first determined to be maturing (April to May 2009), we divided maturing female salmon into three experimental groups. Two groups were given either an azithromycin or erythromycin injection, and the third (control) group received no injection. All surviving fish in the first two groups received a booster injection of the same drug in August. All fish in the erythromycin group, 97.2% of the azithromycin group, and 76.2% of the control group survived to spawn. Kidney tissue samples collected at spawning are being analyzed for antibiotic activity by disk diffusion assay and the presence of Renibacterium salmoninarum antigens by ELISA. We will examine ELISA values, equivalent antibiotic activity and survival to spawning of these female salmon to see if there are significant differences between treatment groups. We will also examine the values to see if there are differences related to brood year rather than gender. These observations will help to evaluate the efficacy of treating maturing fish to reduce infection and mortality associated with BKD.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Ryan	Gerstenberger	Confederated Tribes of Warm Springs	rgerstenberger@hrecn.net

Presenting Paper *Student: False*

Co-Authors

Jim	Griswold	Western EcoSystems Technology
Robert	Reagan	5412968045

Title

Hit the road Jack: Development of non-cohort based run forecast models for the Hood River subbasin

Abstract

Preseason run size forecasts of adult spring Chinook salmon Oncorhynchus tshawytscha and steelhead O. mykiss returns to the Hood River are generated annually to provide managers with necessary information to ensure restoration goals are being met while providing for tribal and sport fisheries. Traditionally adult returns were forecasted with single regression models based on the relationship between younger age (one-salt or jack) returns of a cohort. However jack to adult ratios in the Hood River population are highly variable. This has resulted in poor statistical fit of the models leading to highly inaccurate adult predictions in some run years. In response to the increased importance of producing accurate run forecasts to manage fisheries resulting from the removal of Powerdale dam and fish trap in 2010 we developed a suite of one season ahead multiple regression models using a combination of cohort and environmental predictor variables that have a functional effect on the forecasted populations. The models utilize selected predictor variables contained in annually published datasets of environmental and biological parameters from the Hood and Columbia River basins and the Pacific Ocean. We found the predictive power of the multiple regression models was much higher than the previously used single regression cohort (jack based) models when tested in run years 2008-09. The goodness of fit of the naturally produced spring Chinook forecast model increased from R^2 of 0.14 to 0.90 and from 0.70 to 0.90 for hatchery spring Chinook. In addition to improving existing models new forecast models were developed for wild summer steelhead, hatchery and wild winter steelhead, and wild steelhead smolt. Finally these models are sufficiently intuitive and user friendly to be utilized by those who are not biological modeling specialists.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Brett	Golden	Deschutes River Conservancy	brett@deschutesriver.org

Presenting Paper *Student: False*

Co-Authors

Ryan	Houston	Upper Deschutes Watershed Council

Title

Restoration Effectiveness Monitoring in Whychus Creek, Deschutes Basin, Oregon

Abstract

The Upper Deschutes Watershed Council has developed a collaborative, cost-effective approach to monitoring restoration effectiveness in Whychus Creek. The creek is a major west side tributary of the upper Deschutes River. It historically supported large salmon (Oncorhynchus tshawytscha) and steelhead (Oncorhynchus. mykiss) populations. The construction of the Pelton-Round Butte dam complex on the Deschutes River eliminated anadromous runs from Whychus Creek in the 1960s. Fisheries managers agreed to restore fish passage at and reintroduce anadromous fish upstream of the complex as part of a 2005 federal dam relicensing agreement. This agreement spurred interest in restoring the stream flow and physical habitat necessary to support resident and native fish populations in Whychus Creek. Restoration partners have committed over $10 million to the creation of high quality, connected stream habitat within the creek. In response to this commitment, the Upper Deschutes Watershed Council has led the development of the Whychus Creek Monitoring Program to document restoration outcomes. In an ideal scenario, restoration partners would implement and monitoring individual restoration projects following a rigorous experimental design. In Whychus Creek, limited monitoring resources and multiple restoration actions occurring simultaneously across overlapping reaches make this approach infeasible. Instead, the Upper Deschutes Watershed Council developed a collaborative monitoring approach that builds off of existing monitoring activities. This approach focuses on tracking the status and trends of physical and biological indicators in the creek. The Upper Deschutes Watershed Council expects that restoration actions will affect these indicators. They cannot attribute any changes to restoration actions, but they can document whether the creek is moving towards or away from desired conditions. Limitations of this approach include variability in data collection methods and the inability to document the effectiveness of specific restoration actions.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

James Griswold WEST,Inc. jgriswold@west-inc.com

Presenting Paper Student: False

Co-Authors

Title

Methods for Linear Mixed Effects and Fixed Effects Modeling

Abstract

Methods for Linear Mixed Effects and Fixed Effects Modeling - Mercury in San Francisco Estuary Fishes

When multiple observations occur within sampling sites the independence assumption of sampled observations may not hold. Linear mixed regression models can be appropriate where it may be warranted to include random intercept(s) and or slope term(s) for continuous explanatory variable(s). These random variables can account for the randomness associated with variation in overall mean mercury concentration across sites (intercept) and mercury concentration rate across sites (slope) as a function of fish length in San Francisco estuary Mississippi silversides and topsmelt mercury data. A step by step model selection procedure is presented to identify whether random effects terms are needed and to rank important explanatory variables. AICc criteria and likelihood ratio tests are demonstrated; goodness of fit tests and graphical methods are explained, and methods for model interpretation and model validation are described. A discussion of best linear unbiased predictors for mixed models is contrasted with prediction methods for fixed effects models.

Spatial dependence of sites in data gathered across aquatic systems can be a problem in mixed models such that traditional means of calculating degrees of freedom may not hold. A discussion of spatial dependence is given and analytic and graphical methods are presented to test for spatial dependence in samples.

The potential situation when errors are not normal is dealt with by using a model based bootstrap method to obtained unbiased confidence intervals, prediction intervals and standard errors of coefficients.

R statistical computing software is used to carry out all analyses and codel is available. In addition an EXCEL macro for obtaining confidence intervals for fixed effects regression models is demonstrated.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Rich Grost RTG Photography rgrost@richardgrost.com

Presenting Paper Student: False

Co-Authors

Title

Successful Fish Photos -- Making the Cover!

Abstract

Success in photography is often measured by whether an image has the quality, composition, content, and compellingness to be published -- especially as a large spread or cover. I'll offer tips on what it takes to put a fish on a magazine cover, and some behind-the-scenes stories. Meanwhile I'll show some of my favorite cover and spread images from various magazines, books, and calendars. Unless I decide to show something completely different.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Dean	Grover	US Forest Service	dgrover@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Ken	Homolka	Oregon Dept. of Fish and Wildlife
Ann	Gray	5032316909

Title

A summary of the results of a decade and a half of Hydro Relicensing in the Northwest. How have the fish fared?

Abstract

Approximately 20-30 hydroelectric projects have been relicensed through the FERC relicensing process in Oregon and Washington in the past 15 years. Relicensing is a time consuming process that requires significant commitment of time and resources from all participants including; agencies, tribes, NGO's and, of course, the utilities themselves. These projects are located on many of the major mainstem rivers in the Northwest and affect numerous populations of anadromous and resident fish, many of which are Federally Listed. Although information from individual project relicensings has been widely shared, the authors are unaware of any attempt to evaluate the cumulative benefits of all of the major relicensing and decommissioning efforts on fish pouplations and habitat in the region. This presentation is an attempt to fill that knowldege gap. Using examples from individual projects, the presentation will summarize information on the number and location of the hydro projects relicensed in the Northwest as well as the benefits of selected important mitigation measures for fish and other aquatic resources.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Karen	Hans	Oregon Department of Fish and Wildlife	Karen.M.Hans@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Blair Creek Riparian Restoration Project: Just How Dirty Can We Get Them?

Abstract

In 2008 the Marys River Watershed Council, Freshwater Trust, and 6th, 7th, and 8th grade students from Lincoln School in Corvallis planned and implemented a riparian restoration project on Waldo Wakefield's property along the banks of Blair Creek. When Mr. Wakefield purchased the property, the area next to the creek was developed into a baseball diamond. The riparian area had been stripped of most trees and shrubs and there was little structure in the creek.

With guidance from MRWC and Freshwater Trust staff, and with the assistance of many dedicated volunteers, the Lincoln School students implemented the restoration project. They surveyed the area, learned what species of trees and shrubs were suitable, and plotted the area into zones. Each group of students was assigned a section and over the course of several field trips planted the shrubs and trees.

The Blair Creek Riparian Restoration Project offers an excellent model of how to use students and volunteers to plan and implement a restoration project. By participating in the planning, surveying, plotting, and planting, students participated the entire process for restoring a riparian area.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Tim Hardin Oregon Department of Fish and Wildlife Tim.S.Hardin@state.or.us

Presenting Paper Student: False

Co-Authors

Title

Methods for determining instream flow needs

Abstract

The Instream Flow Council lists at least 30 different methods for determining instream flow needs (IFN). Most of these methods can be categorized as either hydrologic or hydraulic, and either standard-setting or incremental.

To make flow recommendations, hydrologic methods use historical discharge data, while hydraulic methods use on-site physical measurements such as width, depth, and velocity. Standard-setting methods arrive at a single flow number, while incremental methods produce habitat values over a range of flows.

Instream water rights in Oregon are based on Basin Investigations published by the Oregon State Game Commission in the 1960's and 70's. The flow recommendations in these publications were in turn based on the Oregon Method, which was a precursor of the Physical Habitat Simulation (PHABSIM).

PHABSIM is currently the method recommended by ODFW for carrying out studies of instream flow needs, but PHABSIM should be used as only one part of the Instream Flow Incremental Methodology (IFIM). IFIM is a problem-solving approach that incorporates many other factors in addition to the physical habitat space that PHABSIM emphasizes.

The current trend in IFN investigations is toward variable, ecological flow regimes, as will be discussed in other presentations. The IFIM approach is compatible with the concept of a variable flow regime.

To date, ODFW has used relatively straightforward, standard-setting approaches to establish fish-persistence flows and instream water rights. Additionally, ODFW has developed "Stream flow Restoration Priorities" to help identify those streams where fish species would most benefit from flow restoration efforts. Our challenge will be to continue to adapt to the best available science, yet produce standard-setting results that are compatible with State water laws.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Deborah	Harstad	School of Aquatic and Fishery Sciences, University of Washington	deborah.harstad@noaa.gov

Presenting Poster *Student: False*

Co-Authors

Don	Larsen	Northwest Fisheries Science Center, NOAA Fisheries
Brian	Beckman	2065172924

Title

Minijack Prevalence in Spring Chinook salmon of the Yakima River Basin: Management Implications for Determining Smolt-to-Adu Rates

Abstract

In male Spring Chinook salmon (Oncorhynchus tshawytscha) age of maturation is a phenotypically plastic trait ranging from age-1 (precocious parr), age-2 (minijack), age-3 (jack), age-4 to maturing at 5 years. In general, precocious parr and minijacks are thought to forgo migration to the ocean as smolts in favor of remaining in the headwaters to employ a "sneaking strategy" to fertilize eggs during mating between anadromous pairs. To better understand the minijack life-history this investigation monitored minijack prevalence in hatchery and wild spring Chinook salmon from the Yakima River Basin, Washington. From brood years 2001 to 2006 we quantified minijack rates and gender ratios in the hatchery population just prior to release from acclimation sites in the headwaters of the Yakima River and then during outmigration at the Chandler Smolt By-Pass Facility 230 km downstream in the lower Yakima River. Prevalence of minijacks among males at release sites across years ranged from 30.1-54.3% and gender ratios were approximately 50:50. Downstream minijack prevalence among migrating hatchery males was consistently lower ranging from 9.7-17.1%, and gender ratios favored females. Downstream prevalence of minijacks among co-migrating wild male spring Chinook ranged from 0-4% and gender ratios also favored females. These data demonstrate: 1) approximately 20% of all fish released from this hatchery are minijacks. 2) A significant number of hatchery minijacks migrate downstream. 3) Among migrants, minijack rates of hatchery fish are approximately 9 fold that of wild fish. 4) Downstream gender ratios favor females for both hatchery and wild fish suggesting that among both groups a significant proportion of males remain upstream or juvenile outmigration survival favors females. 5) Smolt-to-adult return rates (SARs) can be impacted by this variation in age of maturity since these fish are not smolts being released, but precociously maturing adults.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Patrick	Hayden	Oregon State University	haydenpatrick1@gmail.com

Presenting Paper *Student: True*

Co-Authors

Mark	Terwilliger	Oregon State University
Paul	Scheerer	5417574263x257

Title

Comparing calcified structures to determine a non-lethal ageing technique for threatened Warner suckers

Abstract

The Warner sucker, Catostomus warnerensis, is an endemic, threatened sucker of the Warner Basin of southeastern Oregon and northeastern Nevada. Due to its threatened status, a non-lethal aging technique would be an important management tool. We examined Warner sucker field mortalites as well as native congenerics for two structures that require lethal sampling (lapilli and opercles) and three non-lethal structures (scales, pelvic fin rays and pectoral fin rays). For fin rays, we also examined variation due to ray number (first or second) and section location (basal to distal). We assumed that the lapillus gave the true age of the fish, based upon validated ageing studies in other western lakesuckers, and determined ageing accuracy and precision of the alternative structures. Fin rays appeared to offer a useful alternative to otoliths, depending on the accuracy and precision required, while scales did not.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michael	Heck	Forest and Rangeland Ecosystem Science Center, US Geological Survey	mheck@usgs.gov

Presenting Poster *Student: False*

Co-Authors

Jason	Dunham	Forest and Rangeland Ecosystem Science Center, US Geological Survey
Stephanie	Miller	Native Fish Investigations Project, Oregon Departm
Steven	Jacobs	Native Fish Investigations Project, Oregon Department of Fish and Wildlife

Title

Modeling Electrofishing Sampling Efficiency to Provide Unbiased Population Estimates of Redband Trout

Abstract

As native stream fish populations continue to decline throughout the West, fisheries managers are charged with the important task of monitoring the abundance and distribution of sensitive species. Although sampling techniques may vary depending on target species and stream size, backpack electrofishing is a common way to sample salmonids in wadable streams. And because electrofishing removal estimates are widely used and their results generally accepted, the need to measure sampling efficiency is often taken for granted and population estimates are made without quantifying bias associated with this technique. When a 2005 status review of Great Basin redband trout (Oncorhynchus mykiss newberrii) identified numerous data gaps, the Oregon Department of Fish and Wildlife's (ODFW) Native Fish Investigations Project initiated a 6-year study to assess abundance and distribution of redband trout in southeast Oregon. Sample sites were randomly chosen within the 2,400km of wadable streams using the Generalized Random Tessellation Stratified (GRTS) design. Electrofishing removal estimates were conducted at 718 sample sites between 2007-2009. These estimates, which were known to underestimate abundance and perform with variable efficiency, were calibrated by conducting Lincoln-Peterson mark-recapture estimates at a subset of 100 sample sites. Assuming the mark-recapture estimates represented the true abundance of fish at a site, we compared these estimates to the removal estimates and calculated a sampling bias for the 100 calibrated sites. Sampling bias associated with removal estimates ranged between 0.14 and 1.10 with a mean of 0.60. With these data, we developed models to predict sampling efficiency based on fish size, stream habitat, stream size, and various environmental stressors. These results will enable fisheries managers to independently apply calibrations to populations estimates of redband trout and other species where unbiased estimates of abundance are required.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

David	Heller	USDA Forest Service	daheller@aol.com

Presenting Paper *Student: False*

Co-Authors

Greg	Robertson	USDA Forest Servie TEAMS
Brian	Bair	5599201744

Title

Effectivenss Monitoring of Fish Passage Remediation at Road-Stream Crossings Following Multiple Bank Full Flow Events

Abstract

The Pacific Northwest Region (R-6) is in the second year of a pilot program to assess the effectiveness of remediation treatments for road-stream crossings not providing full passage to all species and life stages of fish and aquatic organisms. Based on a field-based Regional Assessment (2002-2004) more than 3,500 road-stream crossings do not provide needed passage. Over the past 6-7 years more than 250 crossings have been treated, mostly with "stream simulation design." To date, monitoring the effectiveness of much of this work has been done using a wide variety of techniques, many not quantitative and most not examining actual fish and aquatic organism passage success.

The current effort began in 2008 as a pilot program to test protocols for Regional application. Crossings that had experienced one, or more flood events of greater than 5 year return frequency, were selected for assessment. During the first year, mostly physical data was gathered. During 2009, physical and biological sampling was conducted on a total of 19 sites.

This talk will discuss the protocols used, preliminary findings, costs and skills for implementation and recommendations for future monitoring.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Selina	Heppell	Department of Fisheries and Wildlife	selina.heppell@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Title

Developing models to assess the impacts of fisheries bycatch on sea turtle populations

Abstract

Assessing the effects of anthropogenic mortality at the population-level is a difficult task, particularly for wide-ranging marine species such as sea turtles. Nevertheless, quantitative evaluation of impacts is important because it can provide a scientific basis for management actions and recovery planning. While population viability analysis (PVA) is highly uncertain for data poor species, simple models have been used to identify thresholds for population persistence or recovery. We are exploring a series of potential models to evaluate the impacts of anthropogenic mortality on sea turtle populations which could be used to set thresholds for incidental mortality. We have developed 3 alternative assessment models: two are based generally on the "Potential Biological Removal" (PBR) model used for marine mammals, and one is a stochastic simulation approach to determine probability of recovery under different bycatch levels. Our analysis includes the construction of plausible life history models for each sea turtle species that capture the range of our uncertainty about vital rates such as age at maturity and survival rates, which we then use in stochastic simulations. These simulated populations are then "sampled" to mimic data collection and used to evaluate the performance of each of our assessment models. We assess the probability of overestimating or underestimating a maximum removal level relative to pre-established goals of population persistence or recovery over a time frame of 50-100 years. This framework for evaluation of assessment model performance is important when data are highly uncertain, and provides results that can be used to choose among assessment approaches.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jay	Hesse	Nez Perce Tribe	jayh@nezperce.org

Presenting Paper *Student: False*

Co-Authors

Title

Marking of Snake River Basin Anadromous Fish: What is being done and can it be better integrated?

Abstract

Marking fish supports multiple aspects of fisheries management: stock/origin identification, harvest management, monitoring and evaluation, and policy/permitting. No one single mark or level of marking will fulfill all program needs. The primary purposes for marking hatchery-origin Snake River Basin salmon and steelhead include; broodstock composition management, quantification of escapement (abundance)/run reconstruction, harvest management, run prediction, and monitoring specific program/release effectiveness. However, marking fish does not come without cost; financially, philosophically, and for Tribal fisheries managers, culturally. The Nez Perce Tribe Department of Fisheries Resources Management has a guiding principle which states: "Minimizing intrusive marking and handling of fish supports cultural and spiritual beliefs, respect for the fish, and maximum survival." Many hatchery-origin fish are given multiple types of marks prior to release and may receive additional marks after release. For example, approximately 75% of Snake River basin hatchery-origin fall Chinook salmon are marked, with 50% of the released fish being adipose fin clipped, 60% coded-wire tagged (CWT), and 12% (671,000 fish) passive integrated transponder (PIT) tagged. Understanding fish marking at a basin-wide scale is not common and has lead to research inefficiencies, management conflict, and unnecessary fish marking. The information presented will highlight the need for assessing the impacts of fish marking associated with Snake River Basin anadromous fish and opportunities to better coordinate marking efforts.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Megan	Hill	Portland General Electric	megan.hill@pgn.com

Presenting Poster Student: False

Co-Authors

Cory	Quesada	Portland General Electric

Title

Calcein Mark Retention in Chinook Salmon and Steelhead Trout Fry in Artificial and Natural Rearing Environments

Abstract

Managers and researchers need a mark to distinguish between resident and anadromous life histories of juvenile Oncorhynchus mykiss. A mark to evaluate survival and growth of hatchery fish released into the stream is also needed. These questions are pertinent to the Deschutes River Basin, Oregon, where steelhead trout and O. tshawytscha (spring Chinook salmon) reintroduction is underway. Hatchery Chinook and steelhead fry were marked with calcein dye to determine its efficacy for identifying fish after release. Calcein is a dye that binds to the calcified structures of fish; the dye is visible in external structures such as fin rays when exposed to the proper wavelength of light. Fry were marked via osmotic induction by immersing each hatchery incubation tray in a salt bath, followed by a calcein bath. The effects of calcein treatment on growth and survival of marked fish, and mark retention over time were evaluated. Minimal differences in growth were observed between marked and unmarked Chinook salmon, and there was no difference in the length of marked and unmarked steelhead trout at the conclusion of the study. Calcein marking had no effect on survival during the 8 week experiment. The calcein mark rapidly lost its intensity over time. Chinook fry were monitored in stream habitat after release where mark retention fell to 20% and 0% at 6 and 8 months respectively. Steelhead fry were marked and reared under 3 light treatments to directly evaluate if UV light exposure affected calcein retention. After 28 d light exposed fry had no visible calcein marks whereas fry held in covered tanks had 100% mark retention. Currently calcein is not a viable option for marking fry in stream environments due to mark degradation with UV light exposure.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Dave	Hillemeier	Yurok Tribe	dave@yuroktribe.nsn.us

Presenting Paper *Student: False*

Co-Authors

Title

Juvenile Coho Salmon Use of Off-Channel Habitats in the Lower Klamath River

Abstract

The Yurok Tribal Fisheries Program (YTFP) and the Karuk Tribe Department of Natural Resources (KTDNR) initiated a collaborative study in 2006 to better understand juvenile coho salmon habitat use within the Klamath River mainstem corridor, which encompasses the main river channel and its side channels, off-channel habitats and the lower reaches of tributaries near the Klamath floodplain. Fish sampling efforts have included the use of fyke nets, beach seines, and electro-fishing. Fish marking techniques have been used to document fish movement patterns, estimate fish densities, and assess residence time in several off-estuary slough and lower tributary locations. Marking young-of-the year coho salmon with Passive Integrated Transponder (PIT tags) by KTDNR and YTFP throughout mainstem and tributary habitats has enabled tracking movement and growth of these uniquely numbered fish between the time they are marked and subsequent recapture events. Results indicate that fish migrate substantial distances from natal tributaries and mainstem habitats into off-estuary sloughs and off-channel wetlands beginning with the onset of the first fall freshets. Beaver ponds and similar open-water wetlands appear to provide preferred over-wintering habitat in the Lower Klamath for non-natal juvenile coho salmon. Growth rates of coho rearing in these habitats are substantially greater than those of fish sampled over the same time frame in free-flowing tributary habitats; indicating an advantage these still-water habitats, with relatively warm winter water temperatures, offer compared to winter habitat conditions in natal inland streams. PIT-tagged coho from throughout the basin are consistently captured in these types of off-channel habitats. Life –stage habitat requirements and spatial distribution of these habitats seem to determine migratory behavior of juvenile coho. Information regarding the importance of off-channel/beaver pond habitats is guiding our restoration efforts in the Lower-Klamath Basin.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Tim	Hoffnagle	ODFW	tim.hoffnagle@eou.edu

Presenting Paper *Student: False*

Co-Authors

Glenda	O'Connor	ODFW
Rich	Carmichael	541-962-3777
Sally	Gee	ODFW

Title

Prevalence of Bacterial Kidney Disease in Natural vs. Hatchery-Reared Adult Chinook Salmon Spawned in a Hatchery and in Nature

Abstract

Bacterial kidney disease (BKD) is a major health problem of cultured Pacific salmon, Oncorhynchus sp. It is particularly problematic in ESA-listed populations, where the interests of gene conservation and fish health conflict: the risk of reducing genetic diversity in an already depleted population vs. increasing BKD prevalence in the natural population. We used data collected during spawning at Lookingglass Fish Hatchery (LFH) and on spawning ground surveys to examine the prevalence of BKD, based on enzyme-linked immunosorbent assay optical density (ELISA OD) values, to monitor prevalence of BKD in adult Chinook salmon in supplemented and unsupplemented streams and in natural vs. hatchery-reared Chinook salmon in northeast Oregon. Mean ELISA OD levels were very low but differed among all sampled streams - lowest in the Imnaha River salmon (0.0839) and highest in the Minam River (0.1750). Hatchery-spawned salmon had a lower mean ELISA OD level (0.086) than those spawning naturally (0.118). Natural salmon mean ELISA OD level was 0.1058 and 97% were from salmon with ELISA OD level <0.2 and in hatchery salmon, 96% had an ELISA OD level <0.2 and mean ELISA OD level was 0.1138, with no difference between the groups. Mean ELISA OD levels did not differ between salmon from wilderness (0.1663) vs. supplemented (0.1184) streams. Returning adults from the Captive Broodstock Program's F1 generation had a higher mean ELISA OD level (0.1349) than those of Conventional Hatchery Program offspring (0.0957). Annual mean ELISA OD level decreased over time in the Lostine River stock but did not change for any other stock. The data for BKD in northeast Oregon Chinook salmon show that this disease is not prevalent and we found no evidence that the release of hatchery salmon is increasing BKD prevalence in returning adults in the monitored streams. We will continue to monitor this disease.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Timothy	Hoffnagle	ODFW Fish Research	tim.hoffnagle@eou.edu

Presenting Paper *Student: False*

Co-Authors

Barry	Berejikian	NOAA Fisheries
Don	Van Doornik	
Rob	Endicott	NOAA Fisheries
Skip	Tezak	NOAA Fisheries
Megan	Moore	NOAA Fisheries
Jeff	Atkins	NOAA Fisheries

Title

Guidance for Use of Jack Chinook Salmon Males in Hatchery Broodstock Based on Experimental Evidence for Sexual Selection

Abstract

Chinook salmon Oncorhynchus tshawytscha males exhibit alternative reproductive phenotypes. Males that mature one year earlier than the youngest females, termed 'jacks', are smaller and less sexually dimorphic than older males ('adults'). Hatchery spawning practices may proportionately under-represent or over-represent contributions from jack males because of their small size and presumed low natural reproductive success. Alternatively, jacks may be over-represent by spawning all males equally. We quantified the natural breeding success of jack and adult males to provide a template for their use in hatchery programs. We stocked jacks and adults into each of eight replicate breeding groups, varying the number of jacks and adults among the eight breeding groups but holding the overall male density (n = 16) and females (n = 6) constant to test for frequency dependent selection. Male participation spawning events was inversely correlated with their frequency in the breeding population for adults but not jacks. Mean reproductive success of adults decreased with increasing adult frequency, consistent with the negative frequency-dependent selection model. Adult males collectively sired 78 percent of the fry at the highest adult ratio (12 adults and 4 jacks) and 81 percent at the lowest adult frequency (8 adults and 8 jacks). Jack and adult males mated with a similar number of females across all breeding groups (2.0 mates / adult and 2.1 mates / jack). Overall, however, the number of offspring produced per mating was substantially less for jacks (10 per mate) than for adults (24 per mate). These data suggest that a greater percentage of jack males might be used when they are rare and lower percentage when they are abundant. Total contributions from jacks constituting about 20% of a particular brood would mimic their natural breeding success under the range of relative frequencies that we investigated.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michael	Hogansen	Oregon Deparment of Fish and Wildlife	michael.j.hogansen@state.or.us

Presenting Paper *Student: False*

Co-Authors

Nik	Zymonas	ODFW

Title

Monitoring Juvenile and Adult Spring Chinook Distribution, Abundance, and Movements in the South Fork McKenzie River

Abstract

Construction of Cougar Dam in 1963 made all but 6.6 km of the S. Fk. McKenzie River inaccessible to migratory salmonids and diminished habitat suitability downstream of the dam. The Cougar Water Temperature Control Project is a decade-long effort intended in part to reestablish a viable population of spring Chinook salmon in the South Fork McKenzie River basin. This presentation focuses on selected monitoring results from the past three years. To assess adult spawning distribution and proportion of wild and hatchery Chinook spawners downstream of Cougar Dam, we conducted redd counts and carcass surveys. We radio-tagged 60 female hatchery Chinook out-planted upstream of Cougar Dam in 2007 and 2009 to assess survival and spawning distribution based on release site. Results indicated 44% survival to spawning in 2007 and 50% in 2009 and distribution varied for each release group. All adults out-planted above the dam in 2007 through 2009 were sampled for genetics for a pedigree study. We used rotary screw traps to assess downstream movements and size structure of juvenile Chinook into Cougar Reservoir and through the dam. In March through October of 2009, a five-foot screw trap at the head of the reservoir caught 10,196 Chinook fry at 3.8% overall capture efficiency. Genetics tissue samples collected from 5,706 of these naturally produced fry for cross-referencing to the hatchery adults out-planted above the dam in 2008 will provide additional information on spawning success on various release sites. Two rotary screw traps operated in the Cougar Dam tailrace and regulatory outlet since 2007 have provided data on abundance, size, seasonal timing, and mortality of smolts passing through Cougar Dam. These data will provide a basis to help guide upstream passage efforts beginning in 2010 as well as future efforts to provide for downstream passage.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Richard	Holt	Oregon State University	holtr@onid.orst.edu

Presenting Paper *Student: False*

Co-Authors

Jerri	Bartholomew	Oregon State University

Title

Occurrence of the salmonid fish pathogen, Ceratomyxa shasta, in the Clackamas River

Abstract

Occurrence of the salmonid fish pathogen, Ceratomyxa shasta, in the Clackamas River

R. A. Holt and J. Bartholomew
Department of Microbiology, Oregon State University, Corvallis, OR 97331-3804

During summer 2007, approximately 24% of the Big Creek stock juvenile coho died from C. shasta at Clackamas Hatchery that is supplied with water from the Clackamas River below River Mill Dam. While this parasite is known to exist in the Willamette River, the infective stage for fish had never been detected in the Clackamas River. In this study, water samples from throughout the system were collected and tested by quantitative PCR methods to detect C. shasta DNA. Additionally, sentinel fish were held at selected sites to confirm parasite detection. In July 2009, results of water sample analysis indicated parasite abundance equivalent to 1-10 spores/L in the lower River at Clackamas Hatchery intake and River Mill Dam fish ladder. Sentinel fish exposed at these sites for 4 days suffered 62.5 and 60% loss from C. shasta. At sites just below Faraday Dam and North Fork Dam, parasite abundance in water was less than 1 spore/L and no fish became infected. In the Clackamas River near the Oak Grove Powerhouse, in the upper Clackamas River (RKm 89) and in the lower Collawash River, water samples revealed spore levels of 1-10 spores in July; however, fish exposed at those sites did not become infected with C. shasta. Water samples collected on 25 August 2009 from 37 locations from the river mouth to RKm 89 and certain tributaries found parasite levels of less than 1 spore/L. Low parasite detection in upper river areas may be due to parasite myxospore stages introduced by migrating adult spring Chinook and coho salmon and steelhead and not from the fish infective stage.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Thomas Holz Thomas W. Holz, LLC tomholz@comcast.net

Presenting Paper *Student: False*

Co-Authors

Title

Is Development Compatible with Healthy Watersheds

Abstract

Evidence is incontrovertible that intense development destroys fish habitat. For over three decades the literature has documented the devastation of streams in watersheds when they are urbanized (May, 1996; Schueler, 1994, Center for Watershed Protection, 2003). Researchers (Center for Watershed Protection, 2003) have found that physical impacts on streams in the United States include: channel enlargement and incision, loss of pool/riffle structure, warmer water, and a host of other impacts.

Hicks (1991) has shown that simply clearing 25% of a watershed can lead to significant changes in hydrology that can persist for decades even while the forest grows back. Chris May and Richard Horner (Horner, R.M. and C.W. May, 1998) report that for lowland streams in the Puget Sound Basin marked degradation of stream habitat is observed when a watershed reaches impervious surface percentages between 10 and 20 percent.

It is clear that, if watersheds are to survive LID, a standard for low impact development must be created and that standard must embrace the characteristics of a healthy watershed. Speakers at the Salmon in the City Conference in Washington State (1998) defined the minimum characteristics of a healthy watershed, which must be maintained if habitat is to be preserved. They are:

- 60% forest preserved (now widely accepted as 65%)
- Little or no overland flow stormwater discharge
- Broad stream buffers

However, Booth, et al (2002) have reported that simply clearing about one-third of a watershed will increase runoff volume and discharge to the point of destabilizing stream channels.

The title question raises another question: What is meant by “development”? This is the subtitle of this paper. Clearly if aquatic life is to survive development, it must meet a much more restrictive standard than that currently employed.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Susan	Honea	OSU Klamath Basin Research & Extension Center	susan.honea@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Title

Fin and Feather Field Day

Abstract

Fin and Feather Field Day

How do you 'Get students outside and in the Creeks?' In this day of technology getting students to connect with nature takes some teamwork. School budgets are being cut and fewer fieldtrips are being taken. Oregon department of Fish & Wildlife, Klamath Falls Fish and Wildlife and OSU Klamath Basin Research & Extension present two days of Fish & Bird Ecology at the Klamath Trout Hatchery for 143 Junior High Students. The students learned about Fish Ecology, Macro invertebrates, Fly-fishing, Tribal Culture and Bird Watching. The results were ""just the right mix of information and hands on activity to keep the kids entertained and learning"

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Meeting: ORAFS10

Author

Michael	Hudson	US Fish and Wildlife Service - Columbia River FPO	michael_hudson@fws.gov

Presenting Paper *Student: False*

Co-Authors

Jeff	Johnson	US Fish and Wildlife Service - Columbia River FPO
Boyd	Kynard	

Title

Utilizing electronarcosis to radio tag bull trout... not as shocking as you might think!

Abstract

Electronarcosis provides an alternative to chemical anethesia when collecting biological information, tagging or conducting surgery on fish. It can simply be described as the use of electricity to immobilize fish for some period of time. The power source can be AC, pulsed DC, or non-pulsed DC. In this case, non-pulsed DC power was used to induce a state of narcosis, or complete relaxation, in bull trout while surgically implanting radio tags. A list of materials needed and associated costs is provided for easily constructing an electronarcosis unit that can be used in a field environment. We demonstrate through a series of video clips how this type of anesthesia was used to conduct surgery on bull trout and discuss why it might be preferable to chemical agents relative to stress and residual effects.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Justin	Huff	Oregon State Univ	huffju@onid.orst.edu

Presenting Paper *Student: True*

Co-Authors

Douglas	Markle	Oregon State Univ

Title

Relationships between gill pore papillae and myomeres in brook lampreys

Abstract

We evaluated a gill pore papilla character, recently described by Dick Beamish, as a possible corroborating character for myomere patterns in Lampetra pacifica and L. richardsoni (both as recently defined by Reid et al.). Beamish recommended using the third pore on the left side, so we evaluated counts of the second, third and fourth pores, as well as left and right pore counts for both sexes. Although papillae counts can differ by 6 based on pore position or handedness, there was no systematic bias. We found a strong positive relationship between pore papillae counts and myomeres and similar geographic patterns. Pore papillae counts appear to offer a useful additional morphological character, but, unfortunately, are not present in ammocoetes.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

ROBERT	HUGHES	OSU DEPARTMENT OF FISHERIES & WILDLIFE	HUGHES.BOB@EPA.GOV

Presenting Paper *Student: False*

Co-Authors

SUSIE	DUNHAM	INDEPENDENT MULTIDISCIPLINARY SCIENCE TEAM
CARL	SCHRECK	U.S. GEOLOGICAL SURVEY
MICHAEL	HARTE	OCEANIC & ATMOSPHERIC SCIENCES
ALAN	YEAKLEY	PORTLAND STATE UNIVERSITY
STAN	GREGORY	FISHERIES & WILDLIFE
LOGAN	NORRIS	RETIRED

Title

Urbanization versus Salmonids: An Overview of a Report by Oregon's Independent Multidisciplinary Science Team (IMST)

Abstract

For at least 6 years, the IMST has been working intermittently on a report that assesses the interactions between human settlements and salmonids. The draft report received peer review last summer and is being revised with a completion date expected by the time of this meeting. In the report, we ask and answer four questions: How does urbanization alter aquatic ecosystems and what are the implications for salmonid rehabilitation? How might Oregon accomplish the mission of the Oregon Plan in the face of an increasingly urbanized landscape? What is the scientific evidence that ecological structure and function in existing urban and rural-residential areas can be rehabilitated and/or mitigated? What are the major research and monitoring needs for urban and rural-residential landscapes? I briefly discuss each of these questions in my presentation.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Judith	Jensen	Educational Solutions	judith.jensen@educationalsolutic

Presenting Paper *Student: False*

Co-Authors

Lars	Svanevik	Oregon Institute of Technology

Title

Learn Core Science to Save Salmon: A new model for introducing environmental challenges into public school curriculum

Abstract

Educational Solutions is a Klamath Falls-based non-profit that has successfully completed a 2008-2009 project Klamath Watershed project involving 315 students from nine Oregon and California high schools. Students learned about stakeholders' perspectives, causes of water shortage, evaluation of water quality, and factors influencing fish mortality. The focus was finding solutions to watershed problems. Average student improvement, based upon pre- and post-test evaluations, was 91%. In addition, 57% of the students qualified for one unit of biology credit for OIT.

Participating teachers felt the material valuable for their students. However all requested that ES develop environmental projects that directly address state standards mandated by the No Child Left Behind Act. To this end, ES is developing a new educational model, reverse-engineered from state standards, to help students understand and solve important environmental problems. This project focuses on salmon because of the range of habitat and the range of problems that returning salmon will face in both the Upper and Lower Klamath Basin when mid-basin dams are removed.

ES has been encouraged by the Oregon Department of Education to submit a proposal for a Title IIB grant to develop and test the model. We have also been encouraged by the willingness of scientists from the Hatfield Marine Science Center, Oregon State University's Salmon Disease Laboratory, and the United States Geological Survey to work with us to facilitate our model.

This presentation will demonstrate how to relate Oregon standards to important research related to salmon restoration.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jeffrey	Jolley	U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office	jeffrey_jolley@fws.gov

Presenting Paper *Student: False*

Co-Authors

Gregory	Silver	U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office
Timothy	Whitesel	3606042500

Title

Willamette River mainstem habitat use by larval Pacific lamprey and western brook lamprey

Abstract

Native lampreys are ecologically and culturally important in the Columbia River Basin. During both the resident larval or migratory juvenile phases, Pacific lamprey and western brook lamprey are strongly associated with river bottom sediments. Given the uncertainty of life history between hatching and metamorphosis, there is a need to investigate the importance of mainstem river habitats. Our goal was to determine whether the lower Willamette River may be an important rearing area for larval lampreys. Our specific objectives were to 1) determine if larvae were present, 2) determine the probability of detecting larval lampreys in the lower Willamette River (an area known to be occupied), 3) determine the probability of detecting larval lampreys in an occupied 30 m x 30 m quadrat, 4) evaluate the age (size) distribution of larval lampreys in the lower Willamette River, and 5) evaluate the species composition of larval lampreys in the lower Willamette River. We sampled 208 quadrats in the Willamette River and Multnomah Channel using a boat-mounted deepwater electrofisher. Larval lampreys were collected at 11 quadrats, in water depths ranging from 0.6 to 15 m. Quad-specific probability of detection was 0.053. We sampled 10x10 m subquadrats to evaluate probability of detection. Larvae were detected in 15 of the 79 subquadrats that were sampled. Average subquadrat-specific probability of detection was 0.19. In total, 50 larvae ranging from 20 mm to 144 mm total length were collected suggesting individuals of age 1-6 were present. Of the ammocoetes collected 28% were identified as Pacific lamprey, 56% as western brook lamprey and 16% could not be identified. These results indicate larval lamprey use mainstem habitats of the Willamette River further highlighting the potential importance of this habitat; further investigation is ongoing.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Tucker	Jones	Oregon Dept. of Fish and Wildlife	tucker.a.jones@state.or.us

Presenting Paper *Student: False*

Co-Authors

Colin	Chapman	Oregon Dept. of Fish and Wildlife

Title

First Documented Spawning of White Sturgeon in the Lower Willamette River, Oregon

Abstract

White sturgeon Acipenser transmontanus in the lower Columbia River system downstream of Bonneville Dam were previously known to spawn in only one location; the mainstem Columbia River immediately below Bonneville Dam. Our work not only identifies a second white sturgeon spawning site downstream of Bonneville Dam, but provides the first documentation of white sturgeon spawning in the Willamette River, Oregon, immediately downstream of Willamette Falls. We used artificial substrates to sample for white sturgeon eggs from below Willamette Falls. Substrates were fished for approximately 48 hours from 18 May to 20 May 2009 and collected a total of 22 white sturgeon eggs. Embryonic developmental stages ranged from fertilized egg to early epithelial, corresponding to fertilization times of approximately 5-17 hours prior to collection. We estimated that spawning occurred between 2100 hours on 19 May and 0900 hours on 20 May 2009, and that a minimum of three independent spawning events took place during that time. Results suggest that the lower Willamette River may contribute biomass to the white sturgeon population in the lower Columbia River system.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kim	Jones	Oregon Department of Fish and Wildlife	kim.jones@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Sharon	Tippery	Oregon Department of Fish and Wildlife
Charlie	Stein	5417574263
Matt	Strickland	Oregon Department of Fish and Wildlife

Title

Large Wood Restoration Projects in Oregon: Are They Effective at Restoring Stream Complexity

Abstract

Large wood and boulder placement projects have become commonplace in the Pacific Northwest to restore complex stream habitat for juvenile coho and other salmonids. In Oregon alone, over 500 million dollars has been spent on completed projects from 1995 to 2007. Restoration practitioners have distributed the investment among watershed scale activities such as road repair, dam removal, and upland management, and stream scale activities such as passage, instream complexity, and riparian plantings. Detailed assessments have been published for individual projects or experiments; more extensive evaluations have used a post treatment design, but none have used a pre- and post treatment design to assess the effectiveness of numerous projects across a large geographic area. In this presentation we evaluate habitat changes at 141 restoration projects in western Oregon from pre-treatment to one year post treatment, and at 46 projects six years following treatment. Projects commonly treated 0.5 – 1 km of stream, but some extended up to 6 km. The treatments we report on in this presentation are instream projects with large logs, usually arranged in jams, not cabled or driven into banks or bottom. We observed significant changes in the amounts of large wood, complex pools, and coho rearing capacity within one year of treatment. Six years following treatment, the amount of large wood (pieces, volume, and key pieces), complex pools, and coho rearing capacity remained significantly higher than pre-treatment levels, and the percent of pools, gravel and fine sediments also was significantly improved over pre-treatment levels. The findings suggest that large wood project have been effective in restoring and maintaining stream complexity and coho rearing capacity. We will also discuss the potential contribution of large wood restoration projects to coho productivity in coastal Oregon.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Brittany	Kammerer	Oregon State University	brittany.kammerer@oregonstate.

Presenting Paper *Student: False*

Co-Authors

Dietmar	Kültz	University of California, Davis
Joseph J.	Cech, Jr.	5307523103

Title

Correlation of salinity effects on tilapia (Oreochromis mossambicus) plasma osmolality, cortisol, and respiration

Abstract

We examined a time course of events that take place during salinity adjustment in tilapia by measuring plasma osmolytes in correlation with cortisol and respiration. Freshwater (FW) tilapia were exposed to diluted seawater (SW) (25 g/L) and plasma osmolality, Na+, K+, Cl-, hematocrit (hct), cortisol, as well as oxygen consumption (MO2) and ventilation frequency were measured. Cortisol increased rapidly by 3 h and remained elevated until 5 d. Plasma osmolality, Na+, and Cl- were elevated at 6-8 h, but did not peak until 1 d following exposure and decreased to near FW levels by 3 d. Oxygen consumption increased at 1 d SW exposure vs. FW, while ventilation frequency increased immediately following salinity stress at 3 h. Overall, we interpret changes in cortisol to result from plasma solute concentration changes characteristic of osmoregulatory distress. Similarly, increases in whole-animal metabolism (at 24 h) and respiratory rates (at 3 h) are likely a result of cellular restructuring and oxidative metabolism as a consequence of the cellular stress response (CSR) in tilapia during salinity stress. While no significant changes in blood hct were measured, this is suggestive of tilapia's very high tolerance for salinity stress, and overall adjustment occurring via other physiological mechanisms as the organism undergoes acclimation in response to salinity.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Chris Karchesky Normandeau Associates, Inc. ckarchesky@normandeau.com

Presenting Paper *Student: False*

Co-Authors

Tim Shibahara Portland General Electric

Title

EVALUATION OF PACIFIC LAMPREY PASSAGE AT WILLAMETTE FALLS HYDROELECTRIC PROJECT, 2009

Abstract

EVALUATION OF PACIFIC LAMPREY PASSAGE AT WILLAMETTE FALLS HYDROELECTRIC PROJECT, 2009

The Willamette Falls Hydroelectric Project is the oldest hydroelectric development in Oregon and located on the Willamette River at RM 26.2. Although Willamette River lamprey populations are not indexed in this basin, harvest data suggests the population to match or exceed that of the Columbia basin. In 2004, Portland General Electric (PGE) was issued a new license for the Willamette Falls Hydroelectric Project which in addition to significant facility and operational modifications for downstream passage of salmonids, contained a management plan for Pacific Lamprey. The plan addresses lamprey migration within project boundaries both in the current fishways and potential routes over the falls.

PGE conducted radio telemetry studies to evaluate passage performance pre and post modification of the falls and to investigate opportunities to improve passage for this species. Pre modification evaluations identified upstream passage rates ranging from 23 – 35%. Following license issuance, modifications affecting lamprey passage conditions include; lamprey passage structures on the falls, entrance modifications and ladder maintenance of the ODFW fishway, and installation of a 15kcfs Flow Control Structure (FCS) at the apex of the falls.

The 2009 lamprey evaluation has 92% of the study fish returning to the project area to date. Upstream passage rates for this group are 42% from tailrace arrival to forebay. Test fish did not navigate to experimental lamprey passage structures however lamprey were seen to use these facilities. The 2009 radio telemetry study will continue through the migration season of 2010 and PGE will work with stakeholders to identify next steps for lamprey passage.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Julie Keil PGE julie.keil@pgn.com

Presenting Paper *Student: False*

Co-Authors

Title

The collision of law, politics and science: case studies in development of mitigation measures

Abstract

The presentation will examine the forces at work in the development of agreements regarding appropriate mitigation for the impacts of FERC licensed hydroelectric projects.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Benjamen	Kennedy	Abernathy Fish Technology Center - USFWS	benjamen_kennedy@fws.gov

Presenting Paper *Student: False*

Co-Authors

Kevin	Williamson	Abernathy Fish Technology Center - USFWS
William	Simpson	3604256072
Denise	Hawkins	Abernathy Fish Technology Center - USFWS
Kenneth	Ostrand	Abernathy Fish Technology Center - USFWS

Title

Ecological differences of juvenile steelhead produced by natural origin and local hatchery origin adult steelhead spawning in the wild

Abstract

Recent data suggest that steelhead produced from local hatchery origin (HOR) steelhead spawning in the wild have lower fitness than their natural origin (NOR) counterparts. Despite this pattern, the mechanisms behind this phenomenon remain poorly understood. To increase our understanding of this pattern we investigated possible differences in important life history traits related to fitness between juvenile steelhead produced by local HOR and NOR steelhead spawning in the wild. By integrating genetic parentage assignment and ecological data, we looked for differences in fish length, weight, condition, spatial distribution, and migration timing among each parent type. We found similarities in length, weight, and condition factor among juveniles produced by each parent type. However, we found that most juveniles produced by HOR adults were found near the location of adult release whereas juveniles produced by NOR adults were found to be much more broadly distributed throughout the creek. Additionally, some fish from HOR parents moved downstream in the fall to areas where juvenile HOR smolts are released, whereas this pattern was not observed for NOR produced fish. Based on these data we surmise that limited spatial distribution of juveniles produced by HOR adults may play a role in the pattern of decreased fitness for HOR steelhead spawning in the wild.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Rick Kepler Oregon Department of Fish and Wildlife Rick.J.Kepler@state.or.us

Presenting Paper Student: False

Co-Authors

Title

Addressing Peak and Ecological Flows

Abstract

ODFW has long worked to protect instream flows for fish species. Until recently, flow protection was based entirely on water quantity needs for specific life stages, such as spawning or rearing. Recognizing its legal mandate to conserve and maintain habitat for aquatic life, ODFW has begun moving towards determining what peak and ecological flows need protection and how to go about quantifying those flows. Current legislation has also directed the State to identify what peak and ecological flows should be protected.

ODFW will discuss its guidance on addressing peak and ecological flows and discuss some of the considerations in identifying these flows. ODFW's guidance distinguishes between Peak flows, which are based on the predominant bed material and the hydrologic characteristics of the stream, and Ecological flows, which are needed to initiate specific life history behaviors, such as upstream or downstream migration.

Determination and protection of peak and ecological flows is becoming critical to long-term habitat protection, as the State receives increasing inquiries and requests for storage of water over the 50% exceedance values. ODFW's goals are to:

- provide a better understanding for the public and state agency staff as to the peak and ecological flows that ODFW considers important to protect;

- provide a consistent, scientifically- based approach for making peak and ecological flow recommendations; and

- provide some alternatives to ODFW's guidance.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Chris	Kern	Oregon Department of Fish and Wildlife	j.chris.kern@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Preseason salmon return forecasts and implications for management

Abstract

Preseason forecasts are used in many salmon fisheries to provide the basic abundance information needed to craft fisheries prior to the availability of an in-season estimate. Abundance of salmon and steelhead are often unknown until the fish return to their natal streams or until they reach a counting facility such as a dam or hatchery. Accurate forecasts allow managers to craft fisheries that maximize fishing opportunities, remain within management constraints, and protect weak stocks. Potential consequences of inaccurate forecasts include over-harvest, inadequate escapement, violation of management agreements, reduced economic value, and lost fishing opportunities. The importance of pre-season forecasts is apparent in the Columbia River spring Chinook fishery, where fishing effort and demand is high, especially in the 145 mile area downstream of the first counting facility at Bonneville Dam. Delaying fisheries until absolute counts at Bonneville Dam are available would potentially forgo significant economic value and fishing opportunities. Accurate forecasts allow for appropriate fishing levels and maximized economic and fishery returns. However, as forecast accuracy declines, management implications can become significant.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Matthew	King	Symbiotics LLC	matthew.king@symbioticsenergy

Presenting Paper *Student: False*

Co-Authors

Kai	Steimle	Symbiotics LLC
Gerald	George	5032353424

Title

Turbines as Enhancement? A Fish Mortality Study at Wickiup Dam

Abstract

Symbiotics LLC completed a fish mortality study at Wickiup Dam on the Deschutes River, which is currently operated exclusively for irrigation purposes and has no hydropower facility. Using a rotary screw-trap, we captured fish that passed through the outlet structure in order to assess the mortality levels of entrained fish. Sampling occurred monthly from April to October, which coincides with the irrigation season. The trap was operated 24 hours a day for 5 days during each sampling event. Fish were examined for mortality and morbidity. Our catch of 9,041 individuals included five species but was predominantly (98 percent) Kokanee salmon (Oncorhynchus nerka). Mortality rates of Kokanee started at 100 percent in April and decreased to below 50 percent in October. Mortality was positively correlated with reservoir elevation and negatively correlated to fish size and discharge. Of the Kokanee examined for injury, 92 percent showed injury due to dam passage. The most common injury was descaling (93 percent of injured fish), followed by lacerations, head and eye damage, split or bleeding fins, deep bruises, gill damage, and torn opurcula. This study provides evidence that entrainment through dam outlet structures causes high levels of mortality and morbidity, even higher than typically associated with turbine passage.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kathryn	Kostow	Oregon Department of Fish and Wildlife	kathryn.e.kostow@state.or.us

Presenting Paper *Student: False*

Co-Authors

Henry	Yuen	U. S. Fish and Wildlife Service
Chris	Kern	

Title

Recent errors and improvements in salmon run forecasting

Abstract

Salmon run forecasts are an important tool for fishery managers charged with designing annual fisheries, protecting escapement and fairly allocating harvest. However, recent runs have defied predictions from established forecasts models. This presentation examines the recent pattern of errors, reasons why forecasts have been "a bit off" lately, and remedies that have been adopted.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Ralph	Lampman	Oregon Cooperative Fish & Wildlife Research Unit / OSU	ralph.lampman@oregonstate.edu

Presenting Paper *Student: True*

Co-Authors

Carl	Schreck	Oregon Cooperative Fish & Wildlife Research Unit / USGS
Samuel	Moyers	Oregon Department of Fish & Wildlife, Roseburg Reg
Fabian	Carr	Oregon Department of Fish & Wildlife, Roseburg Regional Office

Title

Cryptic Nature of Pacific Lamprey in North Umpqua River: Dam Passage, Habitat Use, and More!

Abstract

Our goal is to understand the physiological effects of dams and other hydrological barriers on adult Pacific lamprey, as well as habitat use and selection and autecology of the species in relation to their upstream migration. Adult Pacific lamprey counts at Winchester Dam (Winchester, OR) have dramatically decreased from 46,785 in 1966 to only 34 fish in 2001 and the counts in recent years continue to be substantially depressed. There is strong evidence that at least some of the Pacific lamprey are using alternate routes to pass the dam besides the fish ladder. By tracking the Pacific lamprey starting below the Winchester Dam using radio telemetry, we monitored their dam passage routes. A better understanding of their passage routes can also help attain a much more accurate population estimate for adult Pacific lamprey that spawn above the Winchester Dam in the North Umpqua River Basin. To our surprise, the vast majority of the tagged Pacific lamprey stayed below the dam even after the peak of their initial, spring-summer migration phase; we do not know if they will again migrate during final maturation this coming spring. The majority of the tagged lamprey moved upstream to reach the dam, but only one of them migrated past the dam. An unexpected opportunity, which arose as a result of the dam repair/dewatering project in the summer of 2009, enabled us to examine the unique location of these lamprey that were holding below the dam. Because the majority of the tagged lamprey stayed in the lower reaches of the river, our habitat analysis was able to examine their selection of summer holding habitat most likely unique to larger river systems, using deep, swift, well-covered habitat.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Meeting: ORAFS10

Author

Ralph	Lampman	Oregon Cooperative Fish & Wildlife Research Unit / OSU	ralph.lampman@oregonstate.edu

Presenting Poster Student: True

Co-Authors

Carl	Schreck	Oregon Cooperative Fish & Wildlife Research Unit / USGS / OSU
Satoshi	Kusuda	Hokkaido Fish Hatchery, Donan Research Branch
Seiji	Yanai	Hokkaido Institute of Technology, Department of Environmental Design
Noboru	Kasahara	Hokkaido Fish Hatchery (currently retired)
Norio	Murano	Rakuno Gakuen University, Department of Environmental System
Yuji	Seo	Ecotech Co., Ltd.

Title

Lessons Learned from the Demise of Japanese Arctic Lamprey

Abstract

The Ishikari River Basin (14,330 km2) in Hokkaido, Japan, was once the most productive river for Arctic lamprey (Lethenteron japonicum), producing over 50 percent of the total harvest in Japan. However, harvest level has decreased steadily since 1988 (132 tons) and has reached an all time low in 2003 (3 tons). This sharp decline observed in recent years is witnessed throughout the species range in Japan and is raising serious concerns amongst fisheries managers as well as the general public. Arctic lamprey have served many valuable roles for the local Japanese people as subsistence and medicinal food as well as a key cultural icon for the local community. In more recent years, lamprey is being identified as a unique “Indicator Species” to evaluate stream health and integrity. We will present an overview of this recent event by sharing information related to the species general biology, threats, and solutions from the Ishikari River Collaborative Lamprey Research Group and propose research questions and management implications, which should provide useful implications for the management of our own native lamprey species in the Pacific Northwest.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Peter	Lawson	NOAA Fisheries	peter.w.lawson@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Nate	Mantua	School of Aquatic and Fishery Sciences

Title

Tempo and mode: climate change, environmental variability and salmon prediction.

Abstract

Many climate change studies have explored the likely physical and biological effects of rising temperatures on salmon runs and a variety of other species. Less attention has been paid to another likely effect of climate change: increasing variability. We are starting to see evidence of changing patterns of inter-annual variability in ocean environments. Given the sensitivity of salmon populations to ocean conditions, we would expect to see accompanying changes in patterns of salmon survival. We use 10-year moving standard deviations to look for changes in variability in major ocean climate indices and in salmon populations from Alaska to California. Patterns vary widely, but there is a strong indication of increased variability in large-scale climate indices such as the PDO. Many, but not all, salmon populations also show increasing variability in escapements. Climate-driven patterns in salmon can be difficult to identify as they are confounded by other anthropogenic factors including harvest, hatchery practices, and habitat alterations. If environmental variability is, indeed, increasing we would expect to see it affecting freshwater as well as marine environments. This would challenge the ability of salmon populations to respond to annual conditions and places increasing importance on maintaining genetic and life-history diversity in salmon runs. Population viability models often include variability, based on historical observations, as a risk factor. If variability is increasing , risk to salmon populations will also be increasing and should be accounted for in assessing viability. Predictive models depend on stationary relationships between adult salmon abundance and predictors such as jacks or environmental factors. If these relationships are changing, or if populations and environmental conditions are fluctuating outside the range of our historical record, then producing reliable predictions becomes increasingly challenging.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Peter	Lawson	NMFS	peter.w.lawson@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Robert	Kennedy
Gordie	Reeves
Chis	Jordan
Mark	Meleason

Title

Patterns of forest disturbance in the Oregon Coast Range with implications for Oregon coast coho salmon

Abstract

Forestry practices in the Oregon Coast Range are widely considered to be a threat to the viability of the Oregon Coast coho salmon Evolutionarily Significant Unit (ESU), yet there has been no way to uniformly evaluate patterns of forest disturbance over the range of the fish. Release of Landsat data to the public, along with recent advances in analysis, now enable us to map forest disturbance on an annual basis from 1986 to the present. Analysis shows that in some coastal river basins over forty percent of forest cover has been disturbed in this time period. Prior to 1990 the highest disturbance rate was seen on Federal forests. After the implementation of the Northwest Forest Plan harvest moved to private industrial lands, peaking in 2002 before falling off somewhat. We test the hypothesis that coho salmon spawners are less abundant in more highly disturbed forests. The relationship between disturbance and spatial patterns of coho spawning abundance are explored. Heterogeneous habitats within the ESU, the sensitivity of salmon usage to the timing of disturbance, time lags in effects, and primary control of abundance by marine survival all conspire to complicate the analysis. Nonetheless, improved understanding of patterns of disturbance will allow us to better understand the distribution of clear-cutting, thinning, and fire in space and time, and the implications of forest disturbance to the distribution, abundance, and productivity of coho salmon in the Oregon Coast ESU.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Camille	Leblanc	OSU	camille.leblanc@oregonstate.edu

Presenting Poster Student: True

Co-Authors

Jeremy	Romer	OSU
Shaun	Clements	
David	Noakes	Oregon Hatchery Research Center
Carl	Schreck	OSU

Title

Seasonality and sizes of salmonid smolts (Oncorhynchus spp.) in Fall Creek, Oregon.

Abstract

Salmonids are at risk throughout Oregon including some populations that are federally listed as threatened or endangered. This poster presents the results of trapping for smolts in Fall Creek (a tributary of the Alsea River), Oregon, from April to June 2009. This was part of a project monitoring the downstream behavior and survival of steelhead in the Alsea basin. We documented: 1) the timing of migration, 2) the number of fish caught and their body lengths, 3) the trap efficiency, 4) and the estimated number of migrants for each species: steelhead trout (Oncorhynchus mykiss), cutthroat trout (Oncorhynchus clarkii) and coho salmon (Oncorhynchus kisutsh). The peak of steelhead smolt migration was mid - April whereas both coho salmon and cutthroat had a peak of smolt migration in early May. Early May also corresponded to high water flow in Fall Creek. The three species also differed in the relationship of body length to time of migration. There was no size trend over time in coho smolts, earlier migrants were the biggest in steelhead trout and the bigger smolts were at the peak of migration for cutthroat trout. This poster is a detailed chronology of juvenile salmonid movements as a baseline for further work on salmonid smolts in the Alsea basin.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Meeting: ORAFS10

Author

David	Leer	Oregon State University, Department of Forestdleer@usgs.gov Engineering, Resources and Management

Presenting Poster Student: False

Co-Authors

Doug	Bateman	Oregon State University, Department of Forest Engineering, Resources and Management
Steve	Clark	Oregon State University, Department of Forest Engi
David	Hockman-Wert	Forest and Rangeland Ecosystem Science Center, U.S. Geological Survey
Steve	Hendricks	Cuesta College, San Luis Obispo, CA

Title

Evaluating Headwater Cutthroat Trout Scales: Will Shortz we have a puzzle for you!

Abstract

Fish scales are commonly used to estimate age and growth in freshwater fishes. Opportunities to validate scale derived estimates are rare. Here, direct measurement of growth from recaptured PIT (passive integrated transponder) tagged coastal cutthroat trout (Oncorhynchus clarkii clarkii), in three headwater catchments of the Umpqua River in western Oregon from 2002-09, were used to evaluate both annual and seasonal patterns in growth and validate estimates derived from scales. Preliminary analyses suggest that accuracy in the chronological aging of headwater cutthroat from scales ranges from 50-65%. Investigations into patterns of annual growth using PIT tags suggest that some portion of the error in aging with scales is due to individuals who fail to grow. Approximately 28% of the cutthroat trout greater than or equal to 100 mm fork length in the three study streams show annual increases in length of less than or equal to 15%. For fish known to be age-2+ or greater, this percentage increases to 52%. The minimum change in size required to detect annulus formation is yet to be determined. In one stream, seasonal patterns of growth were evaluated for a single year and found to be highly variable among individuals suggesting that in some streams of western Oregon, it is unlikely that all cutthroat form annuli during any single season. However, these analyses also suggest that it is possible to reliably detect age 1+ fish using scales collected during July, August and early September.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Blake Lowrey Wolftree, Inc. blake@beoutside.org

Presenting Paper Student: False

Co-Authors

Title

Wolftree: Engaging Students in Watershed Science Education

Abstract

Wolftree: Engaging Students in Watershed Science Education

Blake Lowrey, Wolftree PO Box 524, Sisters OR 97701, (541) 549-1459, blake@beoutside.org

At a time when funds for education are being drastically reduced, school districts around the Nation are shunting programs to focus on the academic core of reading, writing, and arithmetic. Extracurricular activates, field trips, and sports are all being disbanded or reduced to cope with continued budget cuts. As a result, school districts are facing serious challenges, especially in science education. In an effort to combat these challenges, Wolftree involves students in our Watershed Science Education programs. Our mission is to serve people and their communities through innovative science education, ecosystem restoration, and ecological research. With tremendous support from a cadre of regional professionals which act as mentors, Wolftree provides authentic field based science investigations, connecting students from 5th -12th grade with their local creeks, rivers, and forests. These studies enable students to learn about their local watershed firsthand in small groups under the guidance of regional professionals. Studies often culminate with students designing and implementing a restoration project, which strengthens community involvement in habitat restoration. In addition, students are directly involved in management projects, i.e. the reintroduction of Salmon and Steelhead to the Upper Deschutes watershed. By bringing science education out of the classroom and into local creeks, students are motivated to learn and begin to develop an understanding of their watershed based on engaging field studies. They also learn valuable critical thinking skills and gain academic confidence. The current economic downturn is especially challenging on rural school districts and needs to be viewed as an opportunity to involve yourself in science education. Without a positive collaboration between regional professionals and schools, science education will continue to lack the depth gained from field trips and hands on studies.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jennifer Luke ODFW jennifer.a.luke@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Kokanee Karnival Youth Education Program

Abstract

The Kokanee Karnival Youth Education Program is celebrating is 14th year of providing hands-on learning to educate elementary school children about healthy watersheds and fish conservation. The Kokanee Karnival program is available to students in the Central Oregon Tri-county area (Crook, Deschutes and Jefferson) and incorporates field trips and year-round classroom activities. All portions of the program help students achieve Oregon Depart of Education benchmarks in most curricular areas. The partnership between conservation organizations, resource agencies, schools, and sponsors make Kokanee Karnival a success year after year.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Robert	Magie	Pacific States Marine Fisheries Commission	robert.magie@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Jim	Simonson	National Marine Fisheries Service Fish Ecology Division
Richard	Ledgerwood	National Marine Fisheries Service Fish Ecology Div
Bill	Wassard	National Marine Fisheries Service Fish Ecology Division
Bruce	Jonasson	National Marine Fisheries Service Fish Ecology Division
Morris	Matthew	Pacific States Marine Fisheries Commission

Title

Development of a Mobile PIT-Tag Separation by Code and Interrogation Device

Abstract

We installed a PIT-tag separation-by-code (SBC) system on a 12-m pontoon barge to enable researchers to collect individual PIT-tagged fish or specific groups of fish exiting a surface pair trawl in the Columbia River estuary. We adapted SBC technology and components developed for applications at hydroelectric dams to our vessel and constructed a 0.9-m diameter fish collection tube for deployment from the bow of the barge. Additional modifications included a 25 hp water pump, approximately 14 m of 15-25 cm diameter smooth bore plumbing which included the installation of two PIT-tag interrogation coils and associated detection equipment. A switch gate enabled fish to be diverted to a holding tank or returned to the river. Operator controls allowed all fish to be diverted or only those with PIT tags. Initial testing of the system occurred in the Snake River in October 2009 using hatchery fish released directly into the fish collection tube. Few, if any, impacts were observed for either diverted or return-to-river fish. PIT-tagged fish released in low densities with untagged fish were separated with 100% efficiency, but as density increased, efficiency dropped and more untagged fish were diverted. Additional testing is anticipated in the estuary during April 2010 when we will operate the vessel at the exit of a large surface trawl. If those tests are acceptable, we will attempt additional deployments in May to further evaluate impacts to fish, as well as, fish and equipment handling procedures when densities of PIT-tagged fish in the estuary are higher.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Erica Maltz Burns Paiute Tribe maltzem@burnspaiute-nsn.gov

Presenting Paper *Student: False*

Co-Authors

Chad Abel Burns Paiute Tribe

Title

Recovery of Middle and Upper Snake River Tributaries: Chinook Salmon Habitat Feasibility Study in the Malheur River

Abstract

Chinook salmon were once abundant in the Malheur River and, as documented through tribal oral histories and mid-twentieth century ethnographies, were a seasonally important food source for the Northern Paiute. Construction of two water storage facilities, the Warms Springs Dam on the Upper Malheur in 1919 and Agency Valley Dam on the North Fork Malheur in 1926, severed connectivity between important spawning and rearing grounds and lower migration corridors, likely leading to declines in salmon abundance. All three hydroelectric facilities in Hells Canyon, as well as the two dams operated by Bureau of Reclamation on the Malheur, currently lack the potential of volitional fish passage.

In 2010 the Burns Paiute Tribe will begin a reintroduction feasibility analysis with funding from the National Marine Fisheries Service and Pacific Coastal Salmon Recovery Fund. During the initial year we will measure several key water quality parameters including temperature, dissolved oxygen, velocity and discharge, pH and turbidity at fifty sites in historic Chinook spawning and rearing habitat. We will map potential thermal and physical passage barriers to create a comprehensive image of the Malheur today; one that identifies and works to eliminate inter-agency data gaps with research efforts targeted towards ecosystem health and restoration of tribally important resources.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Douglas	Markle	Oregon State University	douglas.markle@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Stewart	Reid	Western Fishes

Title

Freshwater Fishes of Oregon

Abstract

This is an initial progress report for an ongoing project to write a book on Oregon's freshwater fish fauna. The taxonomy of Oregon's fishes is largely unsettled and, consequently, its biodiversity imperfectly known. We outline a book that emphasizes identification using larval through adult characteristics, geographic and geological patterns, and evolutionary and conservation implications. Our current plan is to use nine geographic regions to discuss as many as 90 different taxa of native Oregon fishes. We will also provide treatments of the 47 non-native species of fishes known from the state. Early results for brook lamprey and redside shiners are provided as examples of our approach. Our purpose here is to discuss our plans and solicit feedback from colleagues.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Aaron Maxwell Deschutes River Conservancy aaron@deschutesriver.org

Presenting Paper Student: False

Co-Authors

Title

Restoring Flow to the Deschutes Basin

Abstract

Settlers arriving in Central Oregon in the late 1800's and early 1900's were enticed by the abundant rivers and other natural resources in the region. Before long, however, virtually all of the Deschutes River was diverted for the growing number of families, livestock and agriculture. Unfortunately, the early settlers in this region did not consider the ecological consequences of such actions. These historic seasonal disruptions of streamflow in the Deschutes River and its tributaries contributed to a decline in the overall health of the rivers including degraded habitat for fish and wildlife and poor water quality.

In the early 1990's, a small group of dedicated individuals envisioned an organization unlike any other in Central Oregon. They imagined every stakeholder group in the Deschutes Basin—farming, recreation, ranching, conservation, logging, tribal communities and government—working successfully on market-based solutions to restore the Deschutes River. A few years later, the founders' vision became a reality. The Deschutes River Conservancy (DRC) is a 501(c)3 non-profit corporation founded in 1996 by the Environmental Defense, the Confederated Tribes of the Warm Springs Reservation and local irrigation districts with a mission to restore stream flow and improve water quality in the Deschutes Basin.

Today, local irrigators and municipalities, aware of the serious problems caused by seasonal disruptions of flow, are partnering with the DRC to create viable, win-win solutions. In recent years, numerous methods have been implemented in the Deschutes Basin to restore flow to streams and rivers. These methods include conserve water projects, instream leasing, permanent and temporary water right transfers, water banking, as well as a myriad of adaptive management strategies. These combined efforts have resulted in the restoration of 160cfs to the Deschutes basin, including Whychus and Crooked Rivers, and improved water quality and habitat for fish and wildlife.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jerry	McCann	Fish Passage Center	jmccann@fpc.org

Presenting Paper *Student: False*

Co-Authors

Steve	Haeseker	US Fish and Wildlife Service
Jack	Tuomikoski	5032304287
Brandon	Chockley	Fish Passage Center

Title

Assessing freshwater and marine environmental influences on life-cycle mortality rates of Snake River spring/summer Chinook and steelhead

Abstract

Pacific salmonids express mortality rates that vary temporally and by life stage. In this analysis we develop seasonal, life stage-specific estimates of instantaneous mortality rates of Snake River spring/summer Chinook salmon and steelhead tagged with passive integrated transponders. We found positive covariation in mortality rates between the two species: 1) during freshwater outmigration as smolts through a series of hydropower dams and reservoirs; 2) during the period of post-hydrosystem, estuarine/marine residence through adult return; and 3) during the overall life-cycle from smolt outmigration through adult return, indicating that shared environmental factors are influencing mortality rates of both species. In addition, we found evidence of positive covariation in mortality rates between the freshwater and subsequent marine-adult life stage for each species, suggesting that factors affecting mortality in freshwater may partially affect mortality during the marine-adult life stage. Using information theoretic methods, we assessed the influences of variables characterizing the freshwater environment (percentage of river flow spilled over outmigration dams and water transit time) and the marine environment (Pacific Decadal Oscillation, sea surface temperature, and upwelling) on the life stage-specific mortality rates. We found that the freshwater variables we examined were important for characterizing variation in mortality rates not only during the freshwater outmigration period, but also during the marine-adult period and across the overall life-cycle, consistent with the observed covariation between freshwater and marine mortality rates. The marine variables examined were also important for characterizing variation during the marine-adult period and the overall life-cycle. These results demonstrate that both freshwater and marine factors are important for characterizing variation in Snake River salmonid mortality rates. Across a range of marine conditions, our results indicate that improvements in life-cycle survival may be achievable through increasing spill percentages and/or increased water velocities.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Willis	McConnaha	ICF Jones & Stokes	cmcconnaha@icfi.com

Presenting Paper *Student: False*

Co-Authors

Joshua	Caplan	ICF Jones & Stokes
Chris	Prescott	5038237089
Jesse	Schwartz	ICF Jones & Stokes

Title

Contribution of Urban Streams in the lower Willamette River to Recovery of Salmon and Steelhead

Abstract

Johnson Creek is the largest stream in the lower Willamette and a high priority for Portland's efforts to manage urban streams. The creek is part of an array of habitats that includes the Clackamas system, the lower Willamette and tributaries. These form a habitat complex supporting spawning, rearing and migration to contribute to abundance, productivity and spatial diversity of lower Columbia River coho, fall Chinook and winter steelhead. Johnson Creek and other urban streams add to production capability and provide important off channel habitat. We have analyzed the habitat potential of streams in the lower Willamette focusing on urban streams using the Ecosystem Diagnosis and Treatment model. Portland has used EDT as a framework for guiding and evaluating stream management and restoration actions. This talk will summarize analysis of Johnson Creek regarding habitat potential and the value of restoration efforts. We analyzed four restoration projects in Johnson Creek for coho, fall Chinook, and winter steelhead. We found that the projects significantly increased the potential of the stream to support coho and steelhead. Fall Chinook potential increased to a lesser degree because the projects did not focus on conditions limiting fall Chinook (water temperature and obstructions). Despite restoration efforts, Johnson Creek does not appear to support viable populations of coho, Chinook or steelhead at this time. In part, this is because the projects are immature and species have not responded to the improved conditions. However, our analysis indicates that the availability of habitat, lack of structural diversity, high temperatures and pollutants continue to be major limiting factors for salmonids in Johnson Creek. Restoration of Portland's urban streams can make significant contributions to species management, provide important infrastructural benefits and contribute to the quality of life.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jeff	McEnroe	Bureau of Land Management, Roseburg District	jeffrey_mcenroe@or.blm.gov

Presenting Poster Student: False

Co-Authors

Scott	Lightcap	Bureau of Land Management, Roseburg District
Holly	Truemper	Oregon Department of Fish and Wildlife
Terry	Burleson	Partnership for Umpqua Rivers
Dan	Dammann	Bureau of Land Management, Roseburg District

Title

Wolf Creek Restoration Effectiveness Monitoring - A Partnership Story

Abstract

Millions of dollars have been spent on aquatic restoration projects in the Pacific Northwest over the last several decades. However, evaluating the physical and biological effectiveness of these projects at large scales has proven to be problematic due to high costs and intensive labor needs.

Restoration Partners in the Umpqua Basin recognized an opportunity to attempt a large scale restoration effectiveness monitoring project in Wolf Creek, a 23,000 acre 6th Field sub-watershed in the Coast Range mountains of Southwestern Oregon. By working together in this effort, no single partner was over-burdened with the overall monitoring workload.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Stephanie	Miller	Oregon Department of Fish and Wildlife, Corvallis Research Lab, Native Fish	stephanie.miller@oregonstate.ed

Presenting Paper *Student: False*

Co-Authors

Steve	Jacobs	Oregon Department of Fish and Wildlife, Corvallis Research Lab, Native Fish Investigation Project
Stephanie	Gunckel	5417574263
Shannon	Richardson	Oregon Department of Fish and Wildlife, Corvallis Research Lab, Native Fish I tion Project

Title

Evaluation of a sampling approach to monitor the Status of Great Basin Redband Trout in Eastern Oregon

Abstract

The summer 2009 field season marked the completion of the third of a six year sampling effort to assess the distribution and abundance of redband trout (Oncorhynchus mykiss newberrii) in the six interior basins of Oregon's high desert Species Management Units (SMUs). Across all sampling years, sites were randomly selected using Generalized Random Tessellation Stratified (GRTS) design developed by the EPA which provides a random spatially balanced sample allowing for statistically rigorous evaluation of status, trend and distribution at multiple spatial scales. A total of 699 site surveys were conducted over the course of the study covering nearly 2% of the entire 2,420 km sampling frame. Populations of age+1 redband trout at the SMU level have remained viable and relatively stable since they were first intensively sampled in 1999 and throughout the course of this study. Estimates of overall landscape-wide average abundance of age+1 redband trout was of similar magnitude and had comparable precision across all three study years, averaging 1,116,937 + 21%. However, abundance at the SMU and population level showed substantial variation, both spatially and interannually. Site level fish densities (fish/m) sampled at repeatedly visited annual sites (2007-2009) show significant differences between years, specifically between 2007 and 2009 in the Chewaucan and Malheur SMU's. Target levels of relative precision were not achieved at the SMU level, and infrequently at the population level. Increasing the number of sites sampled to increase precision is not likely given limited funding. Yet, the current study design falls short of providing precise information at the population level reducing the data available to develop a conservation management plan. Alternative sampling designs that would maximize data acquisition at the population level while allowing for estimates of yearly variation were explored and suggested.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Rebecca	Miller	Masters Candidate, OSU Dept. of Fisheries and Wildlife	Rebecca.Miller@oregonstate.edu

Presenting Paper *Student: True*

Co-Authors

Title

Is the Past Present? Historical splash dam stream disturbance detection in the Oregon coast range

Abstract

Splash damming was a common method of log transport in the Oregon coast range from the 1880's through 1950's. Splash dams created an upstream reservoir in which water and logs were stored before being released in large freshets to downstream lumber mills. Much historical anecdotal evidence and recent literature suggest that these practices heavily scoured streams and left behind little in-channel complexity. However, such "rural legends" have not been quantitatively confirmed nor have the locations of splash dams been comprehensively mapped. In this study, all known splash dam sites were included in a geo-database and mapped in GIS at the 1:24,000 scale. Splash dam sites were located through intense literature, museum and field searches. Interviews were conducted with current & retired fisheries biologists, local historians and one splash dam operator. The GIS map was overlaid with available continuous and probabilistic stream surveys to compare habitat characteristics upstream and downstream of splashed dams and between splashed and non-splashed basins. Only dam sites in sedimentary rock types were analyzed. Areas below splash dams had more bedrock but less cobble or large wood than areas above splashed dams. Likewise, streams in splashed basins contained more bedrock but less key wood than streams in non-splashed basins. Basin area and gradient were similar between streams in splashed and non-splashed basins. Results from this study show that activities taking place 50-130 years ago may still affect stream characteristics. Knowledge of environmental legacies can enhance basic mechanistic understanding of streams and may shed light on unexplained relationships between current land use and in-channel conditions. Studies of environmental legacies may be important in highlighting the potential that actions implemented today will have long-lasting effects.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Jeremy	Monroe	Freshwaters Illustrated	jeremy@freshwatersillustrated.o

Presenting Paper *Student: False*

Co-Authors

Jeremy	Monroe	Freshwaters Illustrated

Title

How to talk to police, and other useful tips for freshwater photographers

Abstract

I will share images, stories, and some valuable lessons from my experiences photographing and filmmaking in freshwater ecosystems. I will take every opportunity to embarrass myself and others.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Matthew	Morris	Pacific States Marine Fisheries Commission	Matthew.Morris@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Bruce	Jonasson	National Marine Fisheries Service
Amy	Cook	5038611818
Robert	Magie	Pacific States Marine Fisheries Commission
Richard	Ledgerwood	National Marine Fisheries Service
Gene	Matthews	National Marine Fisheries Service

Title

Implementation of Shielding and Current Attenuation to Reduce PIT-Tag-Code Collision in Large Antennas Used with a Surface Tra

Abstract

Since 1995, a surface pair-trawl system to detect juvenile salmon (Oncorhynchus spp.) marked with passive integrated transponder (PIT) tags has been used in the upper Columbia River estuary. Fish are guided by the trawl and exit through a detection antenna in the cod end. Through the years, detection equipment has evolved to accommodate ever increasing read ranges of tags and, as a result, the fish passage opening through the antennas has been enlarged. Beginning in 1995 with four 20 cm by 60 cm antenna detection coils, the detection system used in 2009 was an antenna with six 72 cm by 305 cm detection coils. As coil-size has increased, water volume passed through the antenna also increased resulting in less fish avoidance. However, expansion of the detection field and increased read ranges of tags increased the likelihood of tag-code collision. This occurs when two or more tags are in the detection field simultaneously so that neither may be decoded. We developed laboratory tests to quantify collisions based on known spacing and orientation of tags. Our tests in 2009 revealed an inability to read tags spaced 30 cm apart whereas read efficiencies of tags spaced 60 cm and 90 cm apart were only slightly affected by collision. Through experimentation with antenna shielding and current attenuation, we were able to compress the detection field while maintaining lateral field strength to consistently read 100% of tags spaced at 60 and 90 cm and have boosted read efficiencies of tags spaced 30 cm apart to as high as 93%. These techniques should significantly increase detection rates of fish during high-density migration periods when collision of codes is more probable.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michael Mulvey Oregon Department of Envirionmental Quality Mulvey.Michael@deq.state.or.us

Presenting Paper *Student: False*

Co-Authors

Robin Leferink Oregon Department of Environmental Quality

Aaron Borisenko 5036935723

Title

Willamette Basin Rivers and Streams Aassessment

Abstract

Oregon's Willamette basin is the hub of the state's population and economy with 70% of the state's population and 75% of the state's employment in only 12% of the state's land area. Monitoring was conducted by municipal, state and federal governments; university researchers, and local watershed councils. The Oregon Department of Environmental Quality has aggregated these various compatible data sets to evaluate stream and river status for the entire basin, for land use types and for 12 subbasins using a range of biological, water quality and physical habitat condition indicators. Randomly selected sites are compared with least-human-impaired reference sites to evaluate the role of natural conditions and human activity to the current stream and river status.
The biological health of 46% of the streams and river miles in the Willamette basin are in most disturbed condition as measured by the stream insect community and other macroinvertebrates. In both agricultural and urban land uses more than 80% of the stream extent is in most disturbed biological condition. Agricultural land use is the largest source of most disturbed streams accounting for 62% of the most impaired stream miles while representing only about 30% of the total stream miles. Forest has a comparatively low extent of disturbance with about 13% of the stream extent biologically impaired. Warm water is the single most extensive impairment in the Willamette basin. Nearly 70% of the stream and river extent in the basin violates the temperature criteria for protecting sensitive cold water fish like salmon and trout. Streams with temperature violations were nearly twice as likely to have impaired macroinvertebrate biological condition and 14 times more likely to have impaired fish and amphibian biological condition. Other extensive stressors included riparian human disturbance and high fne sediment.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michael	Mulvey	Oregon Department of Environmental Quality	Mulvey.Michael@deq.state.or.us

Presenting Poster Student: False

Co-Authors

Robin	Leferink	Oregon Department of Environmental Quality
Aaron	Borisenko	5036935723

Title

Willamette Basin Rivers and Streams Assessment

Abstract

Oregon's Willamette basin is the hub of the state's population and economy with 70% of the state's population and 75% of the state's employment in only 12% of the state's land area. Monitoring was conducted by municipal, state and federal governments; university researchers, and local watershed councils. The Oregon Department of Environmental Quality has aggregated these various compatible data sets to evaluate stream and river status for the entire basin, for land use types and for 12 subbasins using a range of biological, water quality and physical habitat condition indicators. Randomly selected sites are compared with least-human-impaired reference sites to evaluate the role of natural conditions and human activity to the current stream and river status.
The biological health of 46% of the streams and river miles in the Willamette basin are in most disturbed condition as measured by the stream insect community and other macroinvertebrates. In both agricultural and urban land uses more than 80% of the stream extent is in most disturbed biological condition. Agricultural land use is the largest source of most disturbed streams accounting for 62% of the most impaired stream miles while representing only about 30% of the total stream miles. Forest has a comparatively low extent of disturbance with about 13% of the stream extent biologically impaired. Warm water is the single most extensive impairment in the Willamette basin. Nearly 70% of the stream and river extent in the basin violates the temperature criteria for protecting sensitive cold water fish like salmon and trout. Streams with temperature violations were nearly twice as likely to have impaired macroinvertebrate biological condition and 14 times more likely to have impaired fish and amphibian biological condition. Other extensive stressors included riparian human disturbance and high fne sediment.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Shivonne	Nesbit	Oregon State University	shivonne.nesbit@oregonstate.edu

Presenting Paper *Student: True*

Co-Authors

Brett	Hodgson	Oregon Department of Fish & Wildlife
Scott	Heppell	5417371086

Title

Movement patterns of Redband trout and Mountain whitefish in the Crooked River, Oregon.

Abstract

The federally-designated, wild and scenic section of the Crooked River below Bowman Dam is considered to be a blue ribbon fishery for redband trout (Oncorhynchus mykiss). Over the last decade, redband trout density has declined from an estimated 8,000 fish per mile to approximately 600 fish per mile; concurrently the population of mountain whitefish (Prosopium williamsoni) has remained abundant and potentially increased. The decline in redband trout density led the Oregon Department Fish & Wildlife to partner with Oregon State University in order to determine potential causes and recovery options to restore the system to its previous status. To this end, we conducted a two-year radio telemetry study to better understand redband trout and mountain whitefish distribution and movement patterns in the Crooked River as they relate to seasonal habitat use, spawn timing and location, the potential for competition between these two species, and water release patterns from Bowman Dam, which is located at the headwaters to this section of river. We are currently evaluating the movement patterns of redband trout and mountain whitefish but our results show a strong resident life history strategy, indicated by the majority of the tagged fish from both species staying entirely within the wild and scenic section of the Crooked River throughout the duration of the study. This investigation is one component of a more comprehensive research effort designed to determine factors influencing the density and relative abundance of both species in the Crooked River.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

David Noakes Oregon State University david.noakes@oregonstate.edu

Presenting Paper Student: False

Co-Authors

David Noakes Oregon State University

Title

The Oregon Hatchery Research Center: a laboratory in the natural environment

Abstract

The Oregon Hatchery Research Center addresses both practical management issues and fundamental research questions. We investigate the differences between hatchery and wild fishes, in relation to the management and conservation of native species. We test conventional hatchery procedures and innovative experimental analyses under controlled environmental conditions. We address questions about the reproductive success of hatchery and wild fish, the influences of early experience on survival and behavior, the relative importance of genetic and environmental influences on behavior, and the possible effects of domestication in hatcheries. We study both hatchery and wild fishes, in natural and simulated stream channels, conventional hatchery tanks, raceways and in various observation chambers in a controlled aquatic laboratory. We operate with natural surface water taken from Fall Creek, and rely on gravity flow of water through the Center, to minimize environmental impacts. Our studies include genetic pedigree analyses of mate choice and spawning success in steelhead, coho and Chinook salmon (Oncorhynchus species), assessing the role of jack males in mating, and relating genetic parentage to survival and growth of juveniles. Foods, feeding behavior and trophic relationships are critical elements of the life history of salmonids fishes. We are studying the growth and survival of salmonids raised on experimentally formulated diets, compared to their siblings raised on natural foods under simulated field conditions. We have pioneered the use of fish mucus as a non-invasive sampling procedure to study feeding and metabolic activity in salmonids. We use stable isotopes in mucus and tissue samples to determine food web structure, and to assess the impacts of carcass placement programs in coastal salmon streams. We apply knowledge from these feeding studies to investigations of the behavior and physiology of salmon and steelhead smolts. We are tagging and tracking individual juveniles to determine the factors that regulate smolting success.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Sarah Oakley The Freshwater Trust sarah@thefreshwatertrust.org

Presenting Paper Student: False

Co-Authors

Daniel Nelson Wild Salmon Center

Title

Salmon Stewardship Summit: Salmon Education that Spans the Pacific

Abstract

What happens when twelve Russian and twelve American teenagers meet face to face? Add some hot summer sunshine, the meandering Salmon River, volunteers from ODFW and the USDA Forest Service . . . and you get the 2009 Salmon Stewardship Summit! At this weeklong salmon-focused residential camp, based on the popular Salmon Watch program, the Russian and American campers learned about salmon in Oregon while conducting field research on the importance of habitat for juvenile salmon.

Since its inception in 1993, The Freshwater Trust's Salmon Watch program has introduced thousands of Oregon schoolchildren to salmon and the river ecosystems that salmon call home. In 2004, Salmon Watch arrived on Sakhalin Island through an agreement between Oregon Trout and the Wild Salmon Center, a Portland-based conservation organization that works to preserve the last, best wild salmon populations throughout the entire North Pacific.

Russia and the United States are bound by salmon, an ecologically and economically valuable resource in both countries. In addition to an overview of the 2009 Salmon Stewardship Summit, this presentation covers the process of bringing Salmon Watch to Russia and the importance of fostering the next generation of salmon stewards on both sides of the Pacific.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Joseph O'Neil ODFW Oregon hatchery Research Center Joseph.P.ONeil@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Partnership with schools

Abstract

The Oregon Hatchery Research Center is working in partnership with the Lincoln Co. School District, the Hatfield marine Science Center, the Oregon Coast Aquarium and Yaquina Head Natural Area on a 3 year, $300,000 per year U.S. Department of Education math Science Partnership Grant to help improve science teaching and student achievement. This presentation will discuss the involvement of the Oregon Hatchery Research Center in the project and outline the process, challenges and successes that an endeavor like this faces.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Joseph O'Neil Oregon Hatchery Research Center ODFW Joseph.P.ONeil@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Motivating Teachers to Teach Science/Partners in Education

Abstract

Oregon Hatchery Research Center Outreach and Education Presentation Abstract

Presenter: Joseph O'Neil

The Oregon Hatchery Research Center is working in partnership with the Lincoln Co. School District, the Hatfield marine Science Center, the Oregon Coast Aquarium and Yaquina Head Natural Area on a 3 year, $300,000 per year U.S. Department of Education math Science Partnership Grant to help improve science teaching and student achievement. This presentation will discuss the involvement of the Oregon Hatchery Research Center in the project and outline the process, challenges and successes that an endeavor like this faces.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Jeremiah	Osborne-Gowey	Conservation Biology Institute	jeremiah@consbio.org

Presenting Poster Student: False

Co-Authors

Jim	Strittholt	Conservation Biology Institute
Brendan	Ward	Conservation Biology Institute
Phillip	Callaway	Conservation Biology Institute
John	Bergquist	Conservation Biology Institute
Tosha	Comendant	Conservation Biology Institute
Dominique	Bachelet	Conservation Biology Institute

Title

Data Basin Aquatic Center: expanding access to aquatic conservation data, analysis tools, people and practical answers

Abstract

The world's aquatic resources are experiencing pressure at an unprecedented scale and aquatic habitats and organisms are experiencing widespread declines. Climate change is likely to exacerbate these threats, in some cases reducing the range of native North American fishes by 20-100% (depending on the location of the population and the model assumptions). Scientists are generating large volumes of data that vary in quality, format, supporting documentation, and accessibility. Moreover, diverse models are being run at various temporal and spatial scales as scientists attempt to understand previous (and project future) impacts on aquatic species and their habitats. Natural resource practitioners, however, often struggle to extract relevant information. As a result, the best available science is often under-utilized (or not used at all) in decision-making and adaptive management processes. As aquatic conservation problems around the globe become more serious and the demand to solve them grows more urgent, scientists and practitioners need to bring strategic, science-based approaches to aquatic conservation. The Aquatic Conservation Center is being designed and built by the Conservation Biology Institute in partnership with ESRI as part of Data Basin – a new web-based conservation resource that centralizes reliable datasets and provides tools to visualize spatial data, communicate findings, and link conservation scientists and practitioners (http://databasin.org). To illustrate its utility, we present example datasets of varying spatial scales and synthesize multiple studies to help practitioners arrive at novel solutions to aquatic threats.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Steven	Parrett	GoldInWater for Klamath Basin Rangeland Trust	steve@goldinwater.com

Presenting Paper *Student: False*

Co-Authors

Shannon	Peterson	Klamath Basin Rangeland Trust

Title

KBRT and Flow Restoration in the Upper Klamath Basin

Abstract

Upper Klamath Lake (UKL) is the focal point for many water issues facing the Klamath Basin. The US Bureau of Reclamation manages the lake, and balances between providing irrigation water for thousands of acres of land, releasing sufficient water from the lake for endangered coho salmon downstream, and maintaining enough water in the lake for endangered sucker species. Hydrologic modeling demonstrates that an additional 30,000 acft of water is needed to flow into the lake to balance water demands.

The Klamath Basin Rangeland Trust (KBRT) works in the UKL watershed, with the mission of improving the quantity and quality of water flowing into UKL and restoring and protecting stream and wetland habitat. KBRT assists ranchers to reduce water use and protect irrigation water instream. Most ranchers implement a flood irrigation event every two to three weeks during the April to October season. Ranchers working with KBRT have begun managing for complete dryland grazing, or only one early season irrigation event.

KBRT recognizes that reducing water use is a difficult transition, and that most landowners will need time to figure out how to manage their operations with less water before entering into a long-term or permanent water agreement. KBRT aims to provide ranchers with the necessary support they need during the transition time to feel comfortable with reduced water ranching, and then enter into long-term or permanent water deals.

It is often easier to fund long-term or permanent transactions than short-term deals. So to provide support for ranchers during the initial transition time, KBRT matches landowners up with existing federal programs. Programs used include the USBR Water Bank, NRCS EQIP, NRCS CSP, NRCS AWEP, NRCS WRP, and the SWCD CREP. KBRT is now looking towards sources of support from federal, state, and private groups for permanent and long-term transactions.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Scott Peerman The Freshwater Trust scott@thefreshwatertrust.org

Presenting Paper *Student: False*

Co-Authors

Title

Quantifying the Effectiveness of flow restoration projects: The Freshwater Trust's approach to streamflow monitoring

Abstract

The goal of The Freshwater Trust's (TFT) monitoring program is to document, research, implement, and report on the effectiveness of the organization's ongoing and potential aquatic habitat and stream flow restoration projects. Scott Peerman, who oversees The Freshwater Trust's monitoring program, works to design stream flow monitoring efforts tied to programmatic work, while also integrating with the work of TFT's conservation partners throughout Oregon.

Ultimately, monitoring enables TFT to a) evaluate whether project work is effective in meeting intended objectives; b) address significant research questions relevant to the field of stream restoration, so as to allow projects to inform others undertaking this type of work; and c) evaluate the positive socio-economic impacts of restoration work, with the intent of addressing cultural barriers and increasing acceptance of this work in agricultural communities. This presentation will focus on pre and post-project monitoring techniques and challenges.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Brooke	Penaluna	Oregon State University	brooke.penaluna@oregonstate.ec

Presenting Poster Student: True

Co-Authors

Title

The importance of in-stream cover for cutthroat trout

Abstract

In-stream cover may play a more critical role in the response of fish to forest harvest than previously recognized. In-stream cover (e.g. boulder, undercut bank, large woody debris, and vegetation) is influenced by the riparian substrate, stream substrate and stream flow, which are factors that are impacted by forest harvest. My main research objective was to evaluate individual- and population-level responses in coastal cutthroat trout to varying levels of a specific physical factor: in-stream cover using manipulative experiments. I conducted large-scale experiments in a semi-natural outdoor setting with two in-stream cover treatment levels, high or low from June through October 2009. I collected wild cutthroat trout ranging from 100- to 250-mm and I implanted each trout with a 23mm half duplex passive integrated transponder (PIT) tag. For individual-level responses, I measured growth (fork length and weight), emigration, survival, and habitat use for individually tagged fish. For population-level responses, I also measured behavioral responses, including feeding attempts, group size, and reaction distance during feeding attempts. Fish in low cover locations had larger group sizes and longer reaction distances. More fish emigrated out of the low cover locations than high cover locations.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Mathias	Perle	Upper Deschutes Watershed Council	mperle@restorethedeschutes.org

Presenting Paper *Student: False*

Co-Authors

Mathias	Perle	Upper Deschutes Watershed Council
Kristine	Senkier	Upper Deschutes Watershed Council

Title

Whychus Creek Restoration through Camp Polk Meadow

Abstract

Since the installation of hydroelectric dams near Warm Springs in the 1960's, steelhead, chinook and sockeye salmon have been missing from the upper reaches of the Deschutes, Metolius and Crooked Rivers. With the recent federal dam relicensing renewal, new provisions for fish passage are expected to return these runs above the dams.

Whychus Creek was historically one of the most important spawning areas in the upper Deschutes Basin, responsible for up to 40% of the steelhead spawning, with the potential for up to 9,000 spawning fish. Historical accounts of spawning in Whychus have identified the Camp Polk reach as one of the most productive spawning areas. However, in an effort to prevent flooding, the US Army Corps of Engineers channelized Whychus Creek as it flows through the Camp Polk meadow in the 1960s. The channelization resulted in a net loss of stream length, an increase in erosion, and a significant loss of fish habitat, wetlands and floodplain area.

Up until the late 1990s, irrigation withdrawals caused certain reaches of Whychus Creek to frequently run dry. Starting in the late 1990s, restoration partners have made concerted efforts to restore instream flows. These flow restoration efforts have been critical for habitat restoration projects to reach their full potential.

In 2006, the Upper Deschutes Watershed Council began leading a diverse team of professionals and partners to develop a project that would restore a more natural channel dimension, pattern and profile to enhance fisheries and wetland habitat. In summer 2009, this collaborative effort culminated in the implementation of the first phase of a three year restoration project. Phase I work included floodplain regrading (over 35,000 yds), over 1.2 miles of new channel construction through the meadow and planting of over 110,000 native plants along the new channel margin.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author			Meeting: ORAFS10
Roger	Peters	U.S. Fish and Wildlife Service	roger_peters@fws.gov

Presenting Paper *Student: False*

Co-Authors

Tracy	Leavy	U.S. Fish and Wildlife Service
Paul	Bakke	3607535836
Sarah	Morley	National Marine Fisheries Service, NOAA
Phil	Roni	National Marine Fisheries Service, NOAA

Title

Biological Communities, Physical Habitat and the Influence of Freshets on Fish in a Seattle Stream

Abstract

We examined fish, macroinvertebrate communities, and physical habitat in an urban stream in Seattle, Washington. We also evaluated the theory that storm events 'flush' fish out of urban streams using PIT tag technology, including before and after storm mobile PIT recoveries, and a fixed PIT array. Although the fish community in the basin was dominated by cutthroat trout (Oncorhynchus clarki), it varied from the mouth to upstream reaches. Two culverts near the mouth appear to impede upstream movement of fish including sculpin (Cottus sp.), and lamprey (Lampetra sp.). Ecosystem health in our eight study reaches, as determined from the Benthic Index of Biotic Integrity (BIBI), ranged from very poor to poor. Habitat conditions varied among the eight sites, but was generally dominated by riffle and run habitats. Large wood and complex logjams were rare in all reaches. Recoveries of PIT tagged fish suggest that many fish moved from our study reaches prior to storm events. On average, only 10% of the fish in our reaches before storm events were present after storm events. However, some of these fish were observed in nearby study reaches including those upstream. This suggests that their absence may be related to migratory behavior rather than simple 'flushing' as a result of the freshet. There also seems to be a complex interaction of hydrology and artificial constrictions (i.e., culverts) that moderates high velocities normally associated with freshets in some reaches. Although reach scale habitat conditions were degraded it appears that larger scale habitat conditions may have a greater influence on overall ecosystem health in urban streams.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Jessica	Phelps	University of Oregon	jphelps@uoregon.edu

Presenting Poster Student: True

Co-Authors

Title

Impacts of Spalsh Dams on Channel morphology in the Coast Range of Southern Oregon

Abstract

The objective of this study is to determine what, if any, are the persisting impacts of the use of splash dams on the morphology of streams in the southern coast range of Oregon. Splash dams are in stream structures used to aid in the transport of logs from the upper basin areas to the mills downstream. This historic logging practice was utilized in the Oregon coast range from ~1880 until it was banned in 1957. The streams in the southern Oregon coast range were some of the most heavily impacted by the practice. In this study, field sites were chosen in the Umpqua and Coos River basins on Camp Creek and the W.F. Millicoma respectively. Using previously compiled data on the locations of splash dams throughout western Oregon, data was collected at 4 dam locations on Camp Creek and 4 segments above the zone of splash damming on the W.F. Millicoma. Sediment size, channel widths and depths, bank characteristics, presence of large wood and channel shape were documented at 80-100 sites in each basin. Field data from Camp Creek and the W.f. Millicoma in conjunction with LiDAR data of these, and other streams in the region, are being used to test the hypotheses that the use of splash dams in the southern Oregon coast range may have resulted in channels that are incised, lack small sediment and large woody debris and display an overall reduction in habitat and geomorphic complexity. This study is significant to the overall understanding of the function and potential of streams in the Oregon coast range as well as to the widespread restoration efforts in the region.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Joelle	Pomraning	Confederated Tribes of the Umatilla Indian Reservation	joellepomraning@ctuir.com

Presenting Poster Student: False

Co-Authors

Rey	Weldert	Confederated Tribes of the Umatilla Indian Reservation
Brian	Mahoney	5095245220

Title

Reintroduction of Spring Chinook into the Walla Walla Subbasin

Abstract

Since 2000, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Oregon Department of Fish and Wildlife have released surplus adult spring Chinook into the South Fork Walla Walla River. In 2009, the Walla Walla Basin enjoyed almost 800 spring Chinook returns; representing the highest spring Chinook return since 2004 (~ 200 returns); the first time in nearly eighty years spring Chinook returned in significant numbers to the Basin. The Walla Walla Fisheries Restoration Program uses the neighboring Umatilla Basin Project as a model for how people can resolve water and salmon conflicts cooperatively without major impact to the agricultural economy. Currently, CTUIR is proposing to expand its adult spring Chinook holding facility on South Fork Walla Walla River to a full-scale hatchery to produce smolts for volitional release. With the near pristine habitat in many headwater locations and the multitude of flow and fish passage efforts ongoing in the mid to lower basin, it is believed that salmon will be able to once again migrate and thrive following hatchery reintroduction. The Walla Walla Collaborative Salmonid Monitoring and Evaluation Project is conducted by the CTUIR and Washington Department of Fish and Wildlife as funded by Bonneville Power Administration. A focus of this work is to assess the status of spring Chinook in the Walla Walla Subbasin. Study results, including estimates of smolt-to-adult returns (SAR) and adult-to-adult survival (spawner: recruit) were used to describe “Adults-In” and “Juveniles-Out” as a measure of salmonid population viability.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Karen	Pope	United States Forest Service	kpope@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Title

Environmental Legacies: understanding the past – learning for the future

Abstract

The management of non-native fish populations in montane protected areas of western North America is highly controversial due in large part to the increased awareness of the ecological effects of introduced fishes on naturally fishless ecosystems. The practice of stocking salmonid fishes into historically fishless ecosystems to provide a recreational fishery had been occurring since the mid 1800s with little consideration of ecological consequences. I will review the current knowledge about the effects of introduced trout on native species focusing primarily on the effects to amphibians in northern California wilderness areas. The Klamath-Siskiyou Mountains and southern Cascades support a high diversity of native lentic-breeding amphibians. Since 1999, we have studied their distributions, status and threats throughout these ranges in California using both large-scale surveys and whole-lake experiments. Based on surveys of over 1000 lakes, ponds and wet meadows, we found a negative relationship between introduced trout and three amphibian species. We followed the large-scale survey with a replicated whole-lake experiment in which we removed fish from four lakes and quantified the impact of fish on the aquatic and surrounding terrestrial ecosystems and on the recovery of R. cascadae following fish removal. We found dramatically increased survival and recruitment of frogs at the trout removal lakes compared to the trout-containing lakes and fishless control lakes. Currently the California Department of Fish and Game and USFWS are preparing an EIR/EIS on the state's fish stocking program. I will close with a discussion on the current preferred alternative for stocking in historically fish-free waters.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Meeting: ORAFS10

Author

Alena	Pribyl	Oregon Cooperativer Fisheries Research Unit, pribyla@onid.orst.edu Dept of Fisheries and Wildlife, Oregon State

Presenting Paper *Student: True*

Co-Authors

Carl	Schreck	Oregon Cooperativer Fisheries Research Unit, U.S. Geological Survey, Oregon University
Steve	Parker	
Virginia	Weis	Dept of Zoology

Title

Got gas in your genes? Try these biomarkers!

Abstract

Marine rockfish Sebastes spp. are an important commercial and recreational fishery off the West coast of North America. Many species of rockfish experience high discard mortality as a result of pressure-related problems associated with capture, often termed "barotrauma." Research suggests that rockfish have the potential to survive barotrauma if immediately recompressed, but the potential for long term survival is unknown. As part of our work to assess recovery of rockfish, we searched for molecular biomarkers in the liver and heart tissue of black rockfish S. melanops that may be useful indicators of barotrauma. Black rockfish were exposed to simulated decompression from 3.5 ATM (35 m) and subsequent recompression. Rockfish were sampled for heart and liver tissue at three different time points post-barotrauma over a 31 day period. We created a rockfish-specific cDNA microarray to search for potential candidate genes that might be turned on as a result of barotrauma, and then used quantitative real-time PCR to validate expression levels in biological replicates. Of the differentially regulated genes we found, we identified and validated six potential biomarkers that were up-regulated in liver tissue at 3 days post-barotrauma: complement C1q-like protein 2, complement component C3, complement regulatory plasma protein, serum amyloid A-5, c-type lysozyme, and hepcidin precursor type I. All of these genes are associated with the innate immune system in fishes, indicating an immune response to barotrauma. In addition, two of the genes coding for immune proteins were related to the presence of a ruptured swimbladder and feeding in rockfish, providing further evidence that these genes may be good biomarkers of barotrauma. Immune genes were no longer up-regulated 31 days post-barotrauma, suggesting that rockfish were recovering.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Mark	Raggon	USGS Forest and Rangeland Ecosystem Science Center	mraggon@usgs.gov

Presenting Paper *Student: True*

Co-Authors

Jason	Dunham	USGS Forest and Rangeland Ecosystem Science Center

Title

The ecological relevance of temporal variability in the diet and consumption by cottid and salmonid fishes in headwater streams in western Oregon.

Abstract

Traditionally, salmonid production in forested streams has been associated with strong “bottom up” control whereby linkages of instream and riparian habitat directly influence primary and secondary production. Yet in many of these systems we find that cottids can greatly outnumber salmonids in abundance and biomass. Given their propensity to be present in large abundances and their morphological adaptations to benthic foraging (where the highest biomass of prey is produced) cottids may have the ecological capacity to supersede the influences of “bottom up” regulation in headwater streams, altering prey availability for salmonids. To examine this possibility, we sampled the diets of at least 25 individuals per species/size class (cottids, coastal cutthroat trout >100 mm FL, cutthroat trout <100 mm FL) in four stream sections within the Trask watershed study area (http://watershedsresearch.org/) during May, July and September in 2008. Field crews implanted either half-duplex (>100 mm FL) or full duplex (<100 mm FL or SL) PIT (passive integrated transponder) tags to monitor seasonal growth of both salmonids and cottids. We used a bioenergetic model to quantify seasonal patterns of prey consumption and to evaluate the potential for food-limiting conditions encountered by both salmonids and cottids. To further our understanding of how salmonids and cottids overlap in their resource use we used Morisita’s index of niche overlap for aquatic macroinvertebrates, since we expected this resource to exhibit a higher degree of overlap versus terrestrial invertebrates. Taking our analysis a step further we employed the use of individual niche modeling (IndSpec 4.0) to reveal how different individuals within our samples specialized upon certain prey items. Results from this work will provide the first quantitative assessment of the importance of cottids as predators in headwater streams in western Oregon, and their potential to impact salmonids.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Stephen Ralph Stillwater Sciences ralph@stillwatersci.com

Presenting Paper *Student: False*

Co-Authors

Title

Applying a scientific framework for adaptively managing restoration of urban streams, and identifying monitoring and research needs

Abstract

In this century, urbanization and its attendant effects on aquatic ecosystems will inevitably expand to incorporate existing salmon habitat throughout the Western US. Research in recent years has provided us with a greater understanding of the chronic and persistent effects imposed by urbanization on aquatic ecosystems. At present, cities and counties are spending enormous resources in an attempt to both prevent further losses and correct deteriorated environmental conditions in urban streams that once supported salmon and other native fishes. Yet, many of these efforts have focused on "fixing" apparent structural habitat limitations, with little focus on systematically tracking the outcomes of restoration efforts, identify root causes or explicitly stating desired outcomes. Here, we describe a scientific framework that could be used to frame key assessment questions, define realistic goals, help identify appropriate ecological indicators, and define effective strategies to restore urban streams. Approaches to monitoring are described that allow documentation of changes to biotic conditions as well as testing of key assumptions about the effectiveness of restoration actions. Recent research comparing ecological conditions in urban streams to non-urban watersheds is summarized as an example of the type of research needed to advance our understanding of effective control and remediation strategies.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Don Ratliff Portland General Electric Company Donald.Ratliff@pgn.com

Presenting Paper *Student: False*

Co-Authors

James Bartlett Portland General Electric Company

Title

Start-Up of the Round Butte Dam Selective Withdrawal and Downstream-Migrant Fish Facilities

Abstract

After 10 years of concept, modeling, pre-studies, and design, and two years of construction, the Round Butte Dam Selective Water Withdrawal and Fish Transfer Facility began operation in December 2009. The federal licensees for the Pelton Round Butte Hydro Project, Portland General Electric and the Confederated Tribes of the Warm Springs Reservation of Oregon constructed the new selective intake as partial fisheries and water quality mitigation under terms of the new federal license issued in June 2005. The new intake system screens the entire normal flow of the Deschutes River. The surface intake and fish facilities are designed to capture downstream-migrant juvenile salmonids from Lake Billy Chinook for transport to the lower Deschutes River. The first 6,000 cfs of surface flow created by power generation enters through two large V screens which concentrate the water flow with fish down to 60 cfs. Tertiary screens reduce the flow further to 12 cfs. The remaining 12 cfs and fish are pumped from the intake structure to the Fish Transfer Facility. There, dewatering screens and in-line bar separators sort fish by size into holding raceways. All juvenile salmonids transported downstream are being physically marked so upon adult return, only fish originating above Round Butte Dam will be passed upstream. A secondary function of the new intake is to manage discharge into the lower Deschutes River to the approximate temperature it would be if the hydro project was not in place. This will be done by selectively withdrawing surface water during winter and spring, but mixing cold hypolimnic water during summer and fall. Initial fish-passage operation is encouraging as juvenile Chinook and sockeye/kokanee migrants are being captured and separated by size with no observed injury.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Don	Ratliff	Portland General Electric Company	Donald.Ratliff@pgn.com

Presenting Paper *Student: False*

Co-Authors

Title

Limiting Factors for Bull Trout

Abstract

In Oregon and Washington, very cold headwater tributaries with stable, groundwater-driven flows support the healthiest populations. Unobstructed connectivity between these spawning and early rearing habitats and downstream cool-water, sub-adult rearing areas is necessary. Protection from over-harvest, and an abundant forage base for growth to maturity and for post-spawning adults to regain their condition are also important for robust populations. A check-list of factors starting with spawning-juvenile rearing habitat and working downstream following the bull trout life cycle can be helpful in determining controlling limitations for individual populations. Ultimately, if spawning and juvenile habitat quality or quantity, connectivity, or angler mortality do not limit population size, the abundance of prey will determine the size of the population and the size of individuals within the population. However, allowing prey abundance to be the overarching population control for bull trout may have negative consequences. Like their cousins the lake trout, bull trout are very effective predators and can reduce vulnerable prey species such as kokanee, and thus the capacity of a system to support their population. When prey becomes scare, cannibalism likely reduces young bull trout survival. Without intervention, populations controlled by prey base abundance/density may develop a predator-prey cyclic population dynamic, or an abundant population of relatively small individuals with a continually-depressed prey base.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Adam	Ray	Oregon State University	robert.ray@oregonstate.edu

Presenting Paper *Student: True*

Co-Authors

Phillippe	Rossignol	Oregon State University
Jerri	Bartholomew	541-737-1856

Title

Modeling the Ceratomyxa shasta Cycle in the Klamath River System

Abstract

In the Klamath River (KR) the disease ceratomyxosis is one of the factors impacting the survival of out-migrating juvenile salmon. This disease is caused by the myxozoan parasite Ceratomyxa shasta. Ceratomyxa shasta, endemic to the Pacific Northwest, requires a salmonid host and a freshwater polychaete host to complete its life cycle. Over the past ten years, research in our laboratory has been conducted to determine the distribution and densities of both the parasite and the polychaete host within the Klamath system and also to monitor the severity of disease in juvenile salmon. We have developed a mathematical model that identifies the basic interaction parameters of C. shasta and its two hosts. From the parameters in this model a series of equations were developed to describe each stage in the parasites life cycle. These equations were then solved to define the basic reproduction number (R0) of C. shasta. To estimate the value of the basic reproduction number we conducted field experiments to quantify a range of values for select parameters in the model. In the Klamath River, we exposed caged sentinel fish for various lengths of time and measured water velocity to estimate the transmission rate and the infectious dose of C. shasta for juvenile Chinook salmon. From these field exposures we identified a non-linear threshold to mortality from C. shasta in Chinook salmon. As the number of parasite per fish surpassed 5.5 – 9.9 x 10^5, the mortality greatly increased. From the equation for R0 we will be able to identify the key parameters that may act as bottlenecks in the transmission cycle. This model also provides a platform to perform computer simulations to determine the relative effectiveness of different management strategies on reducing the in-river parasite burden.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Gordie	Reeves	PNW Research Stn.	greeves@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Title

Consideration of Spatial Scale in Indentifying Habitat as Limiting Factor

Abstract

Freshwater habitat is often cited as a limiting factor for ESA listed fish in PNW. Generally, not all population segments within an ESU are required to be viable for the ESU to be viable. However, there is no such stipulation about habitat and, as result, it is assumed that habitat conditions in the all portions of the ESU should restored or maintained in "good" condition. This is a very large challenge and progress towards meeting this goal is generally felt to be slow, often not producing the expected increases in fish numbers. This expectation about the need to improve habitat conditions everywhere may be unrealistic, however. A primary reason for this is that there is little evidence to suggest that habitat conditions were ever in good condition across an entire ESU or even most of an ESU at any given time. I will use the Oregon Coast Range as an example to demonstrate how habitat condition varied over large areas and discuss the potential implication for habitat considerations for ESA listed fish.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Stewart	Reid	2045 East Main, Ashland OR 97520	WesternFishes@opendoor.com

Presenting Paper *Student: False*

Co-Authors

Damon	Goodman	Arcata, CA
David	Boguski	
Margaret	Docker	Winnipeg, Canada

Title

Oregon's wonderful lamprey fauna - continuing explorations

Abstract

Although the large, anadromous and edible Pacific Lamprey is the focus of most lamprey research in Oregon, we also have a wonderfully complex fauna of resident lampreys in two genera. The genus Entosphenus is, with the exception of the widespread anadromous Pacific Lamprey (E. tridentatus), appears limited to the Klamath and Goose Lake basins of southern Oregon, where it is represented by at least four endemic species, with additional unresolved taxa. While Lampetra, including the predatory River Lamprey (L. ayresii) and a suite of brook lampreys, is found in coastal drainages and the Columbia Basin. We report on continuing systematic and genetic studies carried out as part of the collaborative Western Lamprey Program, including: confirmed validity of the Pacific Brook Lamprey (L. pacifica) in the Columbia Basin, recent genetic work on the genus Lampetra that has revealed high levels of cryptic diversity within the broadly distributed western brook lampreys, and continuing projects for 2010.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Shannon	Richardson	Oregon Department of Fish and Wildlife	shannon.richardson@oregonstate

Presenting Paper *Student: False*

Co-Authors

Paul	Scheerer	Oregon Department of Fish and Wildlife
Steve	Jacobs	5417574263
Stephanie	Miller	Oregon Department of Fish and Wildlife

Title

Status of Warner Suckers in the Warner Lakes Basin, Oregon

Abstract

The Warner sucker (Catostomus warnerensis) is endemic to the Warner Valley, an endorheic subbasin of the Great Basin in southeastern Oregon and northwestern Nevada. This once-abundant fish, federally listed as threatened in 1985, currently occurs in a system of permanent and ephemeral lakes, diversion canals and sloughs, and three primary tributaries. In 2006 and 2008, we found that lake populations were severely depressed with little evidence of recent recruitment. We also found that populations of non-native fish have increased in the lakes since a desiccation event in 1992 and currently dominate the lake communities. In 2007, we conducted surveys within the three primary tributaries and found sucker distribution to be patchy with few areas of relatively high abundance. In 2009, we conducted intensive studies on stream suckers in the Twelvemile Creek subbasin. We obtained a statistically rigorous population estimate and identified stream reaches where concentrations of fish occurred. Additionally, we assessed the relationship of stream habitat features to sucker occurrence and installed passive integrated transponder (PIT) tags into more than 400 suckers to track seasonal movement and growth. Stream sucker abundance was related to stream temperature and average depth. Length frequencies indicated multiple age classes, suggesting consistent recruitment to the population, although more than half of the fish sampled had external parasites and/or lesions. We detected very little movement of tagged fish between sample reaches.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Ramon	Rivera	McKenzie River Ranger District	rrivera@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

David	Bickford	McKenzie River Ranger District
Kate	Meyer	5418227230

Title

South Fork McKenzie River Habitat Enhancement and Restoration

Abstract

The McKenzie River Ranger District (Willamette National Forest) has been enhancing and restoring habitat for Upper Willamette spring Chinook salmon (Oncorhynchus tshawytscha) and Columbia River bull trout (Salvelinus confluentus) in the South Fork McKenzie River since 1995. Much of this work has occurred upstream of Cougar Dam where an isolated population of bull trout spawns in Roaring River. Although Cougar Dam blocks migration for Upper Willamette spring Chinook salmon, improvements have been focused on habitat for Chinook with an eye toward the future when wild salmon would be provided passage. Prior to the construction of Cougar Dam historic run sizes were estimated to be up to 4,300 adults in 1958. Cougar Dam blocks access to approximately 56 kilometers of Chinook spawning and rearing habitat in the South Fork McKenzie River. Habitat projects in the South Fork McKenzie watershed include: restoration of 881 pieces of large woody material across 8.5 miles of habitat, 10 miles of road obliteration, 20 miles of road storage, and the decommissioning and/or reduction in size of over 100 dispersed camp sites. Monitoring for these projects includes: establishment of photo points, tagging all large wood to monitor durability and transport, and measuring side channel re-establishment and length. Future projects will be guided by the recent acquisition of LiDAR and thermal infrared (TIR) imagery both upstream and downstream of Cougar Dam.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jeremy	Romer	Oregon State University	Jeremy.Romer2@oregonstate.ed

Presenting Paper *Student: True*

Co-Authors

Camille	Leblanc	Oregon State University
Shaun	Clements	
David	Noakes	Oregon State University, Oregon Department of Fish and Wildlife
Carl	Schreck	Oregon State University, U.S. Geological Survey

Title

Monitoring estuarine survival of steelhead trout (Oncorhynchus mykiss) smolts in the Nehalem and Alsea basins, Oregon using acous telemetry

Abstract

Steelhead are at risk throughout Oregon including five populations that are federally listed as threatened or endangered. Steelhead in the Oregon coastal distinct population segment (DPS), which encompasses the two basins of our study, are officially recognized by NOAA-Fisheries as a species of concern and regulations are in place that completely protect native winter run steelhead from harvest. Steelhead smolt survival to the ocean is currently estimated using data from smolt traps located well upstream of the estuary. Very little information on survival is available for this final phase of smolt migration between smolt traps and the ocean. Mortality incurred in this zone has previously been incorporated into survival models under the category of ocean mortality. Our results show 1) wild steelhead smolts spend little time in the estuary 2) typically only 40-50% of the wild steelhead smolts reaching the estuary actually enter the ocean 3) most mortality occurs in the lower estuary 4) smolts tagged during the peak of the run appear to have higher survival rates. Filling this existing “black box” between the last count in fresh water and the Pacific Ocean with actual lower-river and estuarine survival data will facilitate more precise river to ocean smolt survival estimates. In addition, a multiple basin study design enabled us to investigate the possibility that mortality varies not only in a river system along a temporal scale but also between populations within the same DPS. We believe this research provides information that could strengthen the robustness of life cycle models used in recovery plans by providing missing data on where and how much mortality occurs in the riverine and estuarine portions of smolt migration. These data could result in better informed management decisions, benefit steelhead anglers, and assist in guidance for more effective estuarine restoration projects.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Gretchen Sausen U.S. Fish and Wildlife, La Grande Field Officegretchen_sausen@fws.gov

Presenting Paper Student: False

Co-Authors

Title

La Grande Field Office Education and Outreach Programs in Northeast Oregon

Abstract

The U.S. Fish and Wildlife Service (Service), La Grande Field Office (LFO) provides education and outreach programs to local schools and communities in Northeast Oregon with the help of many local partners. In 2009, the LFO was awarded a 2009 ORAFS Education and Outreach Grant to support the LFO's Blue Mountains Fisheries and Watershed Program and help advance the ORAFS goals regarding public awareness, understanding, and appreciation of fish resources.

In 2007, Service Director Dale Hall announced that connecting people with nature, in an effort to ensure the future of conservation, was one of six top priorities for the Service. The motto for this initiative is Let's Go Outside! This issue is important because connecting families and children with nature will help to ensure the future conservation of our natural resources.

The LFO currently provides a number of Fish, Watershed, and Wildlife Programs to local schools and communities in collaboration with partners. These include: the Salmon Life Cycle Program, Steelhead Fish dissections, Macro-Invertebrate Education, the Wallowa County Watershed Festival, Free Fishing Day, Ladd Marsh Bird-a-thon, Kokanee Field Trip at Wallowa Lake State Park, and "Let's Go Outside" Digital Photography Workshop for kids (connecting kids to nature through photography).

The 2009 ORAFS Grant supports our ongoing Fisheries and Watershed Educational Programs, with funding that purchased several hands-on activities and supplies for these programs. The grant also helped fund a professional fisheries biologist and photographer to teach an outdoor photography workshop for kids; bridging science with art. The ORAFS grant contributed to the success of these programs by keeping them functioning, rewarding, and fun; while providing the public with opportunities to learn about their local watersheds, riparian areas, and salmonid populations and habitat. Three schools and over 2,000 adults and children are reached by these programs each year.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Howard	Schaller	US Fish & Wildlife Service	Howard_Schaller@fws.gov

Presenting Paper *Student: False*

Co-Authors

Charlie	Petrosky	Idaho Department of Fish and Game

Title

Influence of seaward migration and ocean/climatic conditions on survival rates of Snake River Chinook salmon and steelhead

Abstract

Improved understanding of the relative influence of ocean and freshwater factors on survival of at-risk anadromous fish populations is critical to success of conservation and recovery efforts. Abundance and smolt to adult survival rates of Snake River Chinook salmon and steelhead decreased dramatically coincident with construction of hydropower dams in the 1970s. However, separating the influence of ocean and freshwater conditions is difficult because of possible confounding factors. We used long time series of smolt to adult survival rates for Chinook salmon and steelhead to estimate first year ocean survival rates. We constructed multiple regression models that explained the survival rate patterns using environmental indices for ocean/climate conditions and in-river conditions experienced during seaward migration. Survival rates during the smolt to adult and first year ocean life stages for both species were associated with both ocean and river conditions. Best fit, simplest models indicate that lower survival rates for Chinook salmon are associated with warmer ocean conditions, reduced upwelling in the spring or downwelling in the fall, and with slower river velocity during the smolt migration or multiple passages through powerhouses at dams. Similarly, lower survival rates for Snake River steelhead are associated with warmer ocean conditions, reduced upwelling in the spring or downwelling in the fall, and with slower river velocity. Given projections for warming ocean conditions, a precautionary approach would focus on improving in-river migration conditions by increasing water velocity, relying on increased spill, or other actions that reduce delay of smolts during their seaward migration.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Howard	Schaller	U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office	howard_schaller@fws.gov

Presenting Paper *Student: False*

Co-Authors

Title

Pacific Lamprey Conservation Initiative-Past, Present, and Future

Abstract

The Pacific Lamprey Conservation Initiative is an effort led by the U.S. Fish and Wildlife Service (FWS) to facilitate communication and coordination relative to the conservation of Pacific lampreys throughout their range. Information on Pacific lamprey distribution and abundance is limited; however, it is thought that both distribution and numbers have declined over their historic range. The need to conserve this species is a high priority for the USFWS considering its benefit to the overall ecosystem and its importance as a tribal cultural resource.

The goal of the initiative is to develop a Pacific Lamprey Conservation Plan that will lead to restored Pacific lamprey populations and improvement of their habitat across their entire distribution. The first steps to accomplish this goal include identification of relative ranking of risk for geographic population groups and prioritization of: threats; restoration actions; research, monitoring, and evaluation needs. We assessed the relative ranking of risk using the NatureServe conservation status assessment tool; and the information on population attributes and threats used in this assessment was gathered through a series of regional workshops. This assessment and existing restoration plans are being integrated for the purpose of guiding the development of the Pacific Lamprey Conservation Plan.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Bruce	Schmidt	Pacific States Marine Fisheries Commission	bruce_schmidt@psmfc.org

Presenting Paper *Student: False*

Co-Authors

Title

A new field tool for electronic data recording

Abstract

Creating data (sampling) is enough work without having to enter the data into a computer later. Wouldn't it be simplest to create the data directly in a spreadsheet program? Creating electronic data in the field saves time and eliminates steps where errors could be inserted, but previous approaches to electronic data creation in the field had significant flaws. Electronic data capture devices can be bulky and fragile. Batteries go dead. They can be difficult to see or use in some conditions and are susceptible to catastrophic failure with resultant loss of data. Wouldn't it be great if writing on paper could automatically insert data into a spreadsheet program? Now it can! The Digital Pen, coupled with character recognition software, performs this feat smoothly, eliminating the data entry step completely. The pen serves two functions: writing in ink on the form and using an optical scanner to capture the written data electronically. The pen downloads the data while being charged and character recognition software enters the data into the appropriate cells in an Excel spreadsheet. In initial tests, character recognition proved surprisingly accurate. This technology is relatively inexpensive and versatile, and it leaves a written record in addition to the electronic data. By employing essentially the same pen and paper method as previously used, it requires no training for use in the field. The pen eliminates the need for manual data entry, requiring only a visual comparison to validate entries, both saving time and improving data accuracy.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Bruce	Schmidt	Pacific States Marine Fisheries Commission	bruce_schmidt@psmfc.org

Presenting Paper *Student: False*

Co-Authors

Title

Data Sharing Across Agencies: A guide for getting everyone on the same page

Abstract

In today's complex world of fisheries management there is a growing need to effectively share data across agency lines. Shared management responsibilities, multi-jurisdictional fisheries and federal laws like the ESA and the Power Act, like the populations of the fish, extend beyond the authorities of any individual agency. Since many of these broader efforts do not necessarily collect the needed data directly, they are dependent on shared data. Many management agencies, however, collect data primarily to meet their own mandates and responsibilities and sharing can be a lower priority. Recent emphasis on data sharing from regional entities led the StreamNet Project to prepare a data sharing guide entitled "Considerations for Regional Data Collection, Sharing and Exchange." Written for non-IT professionals, this white paper is intended to encourage interagency discussions and to assist agencies with building the needed capabilities for efficient data sharing. The guide also outlines the various roles that different agencies and entities need to play to support broad scale data sharing, including funding to support development of data sharing capabilities and policy to establish priorities and to protect data creators and assure that data are used appropriately. The cost of data management has been declining, and much can be accomplished within existing funding with adjustments to internal procedures. The data sharing guide is available from the StreamNet website (www.streamnet.org) in the miscellaneous documents section (http://www.streamnet.org/reports_pubs.html).

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Nat	Scholz	NOAA Fisheries	Nathaniel.Scholz@noaa.gov

Presenting Paper *Student: False*

Co-Authors

David	Baldwin
Jenifer	McIntyre
Kate	Macneale
Julann	Spromberg
John	Incardona

Title

Stormwater and salmon don't mix

Abstract

This presentation will highlight recent NOAA research on toxic stormwater runoff and salmon health and survival in urban and urbanizing watersheds.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Carl	Schreck	USGS/OSU	carl.schreck@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Title

Needles in Haystacks, Haruspication and Much Harder than Rocket Science: Perspectives on Science for Fisheries

Abstract

I use this opportunity to pontificate on my understandings and predictions of science relevant to "Success through Science and Management". Management often dictates what science gets done, so it is imperative that scientists are pointed to the right haystack when they go looking for that needle. Is management asking the right questions? As scientists, we need to understand that our own ethical, sometimes personally conflicting, beliefs affect our science. We also must consider that many of the scientific premises that we hold may simply be wrong. Questions arise: Are we using the appropriate science to study natural systems if almost all of our focuses are on mean responses while the variance might be more important? Are our analytical philosophies correct if biological responses to perturbations or management are not monotonal but rather hormetic (biphasic) or some other response dynamic? Do scientists play a role in adaptive management? The next decade will be marked by astonishing advancements in science; it will unfortunately be equally marked by a striking lack of progress in critical areas. I close by saying that I'm humbled by the greatness of the giants that have preceded us, and I'm equally humbled by the greatness of our students who will follow. I suggest that it is the responsibility of scientists to ensure that (1) the giants of the future be provided with better scientific paradigms than were available when we entered the field and (2) that the state of our aquatic resources be in better shape at the end of than at the beginning of our careers . I profess that these two axioms are the religion that should drive what fisheries scientists do.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jaym'e	Schricker	The Confederated Tribes of the Warm Springs Reservation of Oregon	jayme.schricker@wstribes.org

Presenting Poster Student: False

Co-Authors

Cyndi	Baker	The Confederated Tribes of the Warm Springs Reservation of Oregon
Jen	Graham	5415532006

Title

A Bull Trout Story: Ten Years of Monitoring on the Warm Springs Reservation

Abstract

In 1998, when the Columbia River population of bull trout was federally listed, the Confederated Tribes of Warm Springs Reservation of Oregon (CTWSRO) began monitoring juvenile and adult bull trout abundance in Shitike Creek (SC) and Warm Springs River (WSR). Juveniles were surveyed by night-time snorkeling in a 2.4 km study area in the WSR and nine reaches (109 – 213 m) in SC. Spawning adults were monitored by redd counts in index reaches in WSR and SC. Between 1999 and 2009, juvenile bull trout density in SC fluctuated from 11.7 to 45.1 fish/1000m2; an overall declining trend (slope = -1.5). In WSR, density fluctuated from 3.0 to 14.3 fish/1000m2 with an increasing trend (slope = 0.4). Redd counts in SC had a declining trend from 1998 to 2009 (slope = -3.8) and typically varied around the average of 108, except for 2002 – 2005 when redds fluctuated between 27 and 204. Redd counts in WSR declined at a faster rate (slope = - 8.0) than SC (slope = -3.8). In 2009, redd counts in WSR were 86% less than the 2002 peak, 16 and 113, respectively. Available fish and habitat data does not adequately explain these trends. Currently, CTWSRO is reviewing monitoring data in WSR and SC from 1998 to 2009. Goals and methods will be restructured to include more thorough monitoring of juvenile and adult bull trout outside of current study areas. In addition, fragmented metapopulations of bull trout in the Metolius River will once again have access to WSR and SC following changes in operations at Pelton-Round Butte (PRB) hydroelectric complex. Salmonids caught in the fish collection facility will be released downstream. Monitoring WSR and SC is further warranted with re-expression of the fluvial life-history form of bull trout upstream of PRB.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Kirk	Schroeder	ODFW	kirk.schroeder@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Fred	Monzyk	ODFW
Ken	Kenaston	
Brian	Cannon	ODFW

Title

Mending A Broken Chain: The Role of Life History and Habitat in Recovering Spring Chinook in the Willamette Basin

Abstract

Spring Chinook salmon in the Willamette River basin have been listed as a threatened species under the federal Endangered Species Act. Habitat throughout the Willamette Basin has been altered because of dam construction, urban and agricultural development, and simplification of rivers. Knowledge about life history patterns and how life histories may be affected by environmental changes are important for designing effective recovery strategies and restoration activities. Using historical information and ongoing investigative studies and field observations, we have begun to piece together a picture of how juvenile Chinook migrate and rear throughout the basin. Juvenile fish migrate from spawning areas into the lower reaches of large tributaries and the main stem of the Willamette River as fry (late winter-spring), subyearlings (spring-summer), and yearlings (fall-spring). Significant numbers of juvenile fish emigrate from the Willamette River as subyearlings after a short rearing period, whereas other fish rear in the river through summer and winter as subyearlings before emigrating in the following spring as yearling smolts. Juvenile Chinook salmon have been captured in the winter in intermittent streams and seasonally flooded areas, up to 32 km from the Willamette River. Conservation and restoration of diverse riverine habitats should be important links in a recovery strategy. Dams in the basin should be managed to help return the river to more normative conditions as measured by indicators such as sufficient flows to allow channel formation processes to occur and to provide access to seasonally important habitats.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jesse Schwartz ICFI jesseschwartz@icfi.com

Presenting Paper *Student: False*

Co-Authors

Title

Simulation of Chinook Salmon Life History Trajectories in an Anastomesed Stream Network

Abstract

Life history trajectories (trajectories) represent biologically reasonable pathways through time and space. They are used in a modeling context to describe the breadth of life history expression, to evaluate alternative life history pathways, and to estimate exposure to environmental conditions. In the Ecosystem Diagnosis & Treatment system (EDT) trajectories are generated from a spawning location, transition to rearing habitat, and complete the life cycle by returning to the spawning location at a biologically reasonable time. In a typical stream network these pathways are relatively straightforward, even if they involve some upstream migration of juveniles. A representative sample of the habitat can be generated by estimating the quantity of spawning habitat, and distributing spawning across those reaches. Tributary rearing is subsequently sampled by including some fraction of upstream migration. An anastomosed environment includes stream reaches that branch in a downstream direction and reconnect some distance downstream. This presents a difficult sampling problem for deterministic trajectories because the complexity of the network can be variable downstream of a branching node. This can leave some habitat un-sampled or under-sampled for rearing or migratory life stages if trajectories traverse nodes haphazardly or even randomly. We used the estimate of network connectance (C) in terms of links (L) & nodes (N) such that C = L/N2 for each reach based on the downstream network conditions to estimate the relative sampling effort needed downstream from a decision point. Trajectories moving downstream follow each potential pathway based on a simply probability around these choices. The result is a deterministic sample of the anastomosed network that includes greater sampling intensity in areas of greater network complexity. The approach has application to stream bypasses, complex floodplain conditions, and large networks such as the Columbia estuary.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jesse Schwartz ICFI jesseschwartz@icfi.com

Presenting Poster Student: False

Co-Authors

Chip McConnaha ICFI

Title

Ecosystem Diagnosis & Treatment 3.0

Abstract

The Ecosystem Diagnosis & Treatment system (EDT) was developed more than ten years ago as a preliminary application of the medical model to watershed management issues. The first tool was developed in an offline database environment, focused almost exclusively on Chinook and steelhead in their freshwater life stages. The second version of that tool included its evolution to a web-based environment, and provided a shared system for cooperative subbasin planning. The tool has been used throughout much of the Columbia Basin and Puget Sound. While there was much strength in these systems, modern Ecosystem Health Management problems present ever increasing challenges for flexibility & integration. Ecosystem Diagnosis & Treatment 3.0 (EDT3) is a modernized toolset based on public facing Webservices and the Windows Presentation Foundation environment. It is a rich-client application that leverages the power of desktop computers, while providing opportunities for integration with USGS & EPA Webservices. EDT3 was designed to offer integration with ACOE HEC data, hydrological unit codes, and a variety of GIS sources. The system includes a more flexible data management and reporting paradigm that allows for ESU-specific species-habitat-relationship rules, habitat status & trends reports, and variable out of subbasin conditions. The tool provides a comprehensive user interface for designing, testing, implementing, and publishing EDT models based on the medical model paradigm put into play more than a decade ago.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Scott	Sebring	Pacific States Marine Fisheries Commission	scott.sebring@noaa.gov

Presenting Paper *Student: False*

Co-Authors

Richard	Legderwood	NOAA Fisheries, Northwest Fisheries Science Center
Melissa	Carper	
Ben	Sandford	NOAA Fisheries, Northwest Fisheries Science Center
Gene	Matthews	NOAA Fisheries, Northwest Fisheries Science Center

Title

Relative Vulnerability to Avian Predation of PIT-tagged Subyearling Fall Chinook salmon in the Columbia River Estuary

Abstract

Avian predation by Caspian terns (Hydroprogne caspia) and double-crested cormorants (Phalacrocorax auritas) on juvenile salmonids has been a concern since large numbers of birds began nesting in the Columbia River estuary during the 1980s. Avian colonies in this region have increased and those located on East Sand Island are considered among the world's largest breeding colonies for their respective species. As such, avian predation on particular groups and species of juvenile salmonids constitutes a significant source of mortality upon migration to the ocean. The most vulnerable group of fish currently in the Columbia River basin is subyearling Chinook salmon originating in the lower Columbia River (LCR). We compared avian predation rates of these fish released from LCR hatcheries to subyearling Chinook salmon detected at Bonneville Dam from 2002 – 2009 by documenting the number of PIT-tagged fish consumed by avian predators nesting on East Sand Island. Mean predation rates of PIT-tagged fish originating in the LCR and those originating upstream from Bonneville Dam were 16 and 4%, respectively. We observed a statistically significant difference in the proportion of fish consumed by avian predators between the two detection locations (LCR vs. upstream from Bonneville Dam) ($P = 0.0005$). The majority of fish released into the LCR was consumed by cormorants (75%), whereas the majority released upstream from Bonneville Dam was consumed by terns (56%). Our minimum estimate of avian predation suggests annual mortality due to estuary avian colonies exceeds six million LCR subyearling Chinook salmon.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Brian	Sidlauskas	Oregon State University, Department of Fisheries and Wildlife	brian.sidlauskas@oregonstate.ed

Presenting Paper *Student: False*

Co-Authors

Jan	Mol	Department of Biology & Center for Agricultural Research in Suriname, Anton Kom University of Suriname
Richard	Vari	2026331207

Title

Allometrically Informed Approaches to Species Discrimination and Discovery in the Leporinus cylindriformis group (Characiformes: Anostomidae)

Abstract

We investigated the ability of linear and geometric morphometrics to delimit species within the Neotropical fishes of the Leporinus cylindriformis group. Once the regression-based approaches in SMATR and MORPHOJ were used to account for marked allometric variation, most of the recognized species in this group could be distinguished with either morphometric method, particularly using variation in the depth of the body. Both approaches returned congruent patterns of separation among putative species, but the geometric approach distinguished four more species pairs than could the linear approach and provided more statistical power. Based on distinctive morphometrics, meristics and coloration, a highly elongate series of fish from Suriname appears to represent a new species. The unique Leporinus cylindriformis holotype from Porto de Moz, Brazil differs in morphology, meristics and pigmentation from specimens commonly referred to that species from the main basin of the Amazon; the latter specimens may represent an additional undescribed species. The L. cylindriformis holotype itself may represent a rare species or a specimen collected at the edge of its native range. Morphometric differences also exist within the current concept of Leporinus niceforoi, but additional specimens are needed to determine whether this variation indicates a morphocline within a single species, suggests the presence of multiple cryptic species, or results from shrinkage of the types. In all these cases, reliable morphometric differentiation among species requires careful attention to allometric variation within species.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Matthew	Sloat	Oregon State University	matthew.sloat@oregonstate.edu

Presenting Paper *Student: True*

Co-Authors

Title

Density-dependent selection on metabolic indices of survival and growth in territorial stream fish

Abstract

Territorial fish can experience strong density-dependent displacement and mortality in the initial stages of territory establishment and defense. During this period, physiological traits such as metabolic rate can confer advantages for individuals in competitive interactions. Consequently, metabolic rate may be a trait under strong selection during early ontogeny, with the strength of selection dependent on competitor density. In teleost fish, otoliths provide an index of relative metabolic rate that can be retrospectively sampled, allowing tests of selection on this physiological correlate over time. I report the results of an experimental test of the effect of steelhead (O. mykiss) density on selection for otolith size in replicated artificial stream channels stocked with newly emerged fry at densities of 25, 75, and 100 fish/m2. Since metabolic indices are correlated with life history expression in salmonids, I discuss how the results of this study may help our understanding of partially migratory salmonid species (i.e., populations with anadromous and resident components).

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Toz	Soto	Karuk Tribe	tsoto@karuk.us

Presenting Paper *Student: False*

Co-Authors

Dave	Hillermier	Yurok Tribal Fisheries Program
Larry	Lestelle	Biostream Environmental

Title

Juvenile Coho Life History Tactics Utilizing the Mid-Klamath River Corridor with Linkages Between Inland and Coastal Riverine Habitats

Abstract

The Karuk Tribal Fisheries Program (KTFP) and the Yurok Tribal Fisheries Program (YTFP) initiated a collaborative study in 2006 to better understand juvenile coho salmon habitat use within the Klamath River mainstem corridor. The mainstem corridor encompasses the main river channel and its side channels, off-channel habitats and the lower reaches of tributaries in close proximity to the Klamath floodplain. Sampling efforts include use of beach seines, fyke nets, directional weir traps in combination with marking and tagging fish to determine extent of residence, fitness and distribution in relation to seasonal shifts in habitat characteristics Results indicate that some juvenile coho leave natal areas and re-distribute within the mainstem river corridor with movements closely associated with seasonal changes in water quality and flow patterns. The use of non-natal habitats within the mainstem corridor, including small tributaries and off-channel features, appears to be an important survival mechanism for some juvenile coho in the Mid Klamath region during summer when water temperatures exceed lethal levels, and during winter when high flows occur. The relative importance of an overwintering re-distribution, however, appears to differ between the upper reach of the Mid Klamath region, where winter flows are more stable due to less precipitation compared to the lower part of the region. Flow patterns are much more dynamic downstream of Happy Camp in winter. Findings indicate that recovery actions could be tailored to benefit juvenile coho that utilize the mainstem corridor, thereby improving overall population viability. Strategic habitat restoration within the corridor could benefit all spawning aggregates located upstream.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Dina	Spangenberg	University of Washington	Dina.Spangenberg@noaa.gov

Presenting Poster Student: False

Co-Authors

Don	Larsen	Northwest Fisheries Science Center, NOAA Seattle WA 98112
Deb	Harstad	
Kathy	Cooper	University of Washington
Paul	Parkins	Bonneville Power Administration
Brian	Beckman	Northwest Fisheries Science Center, NOAA

Title

Effect of altered emergence timimg on smolting in Yakima River Spring Chinook

Abstract

Both wild and hatchery raised Chinook salmon display a wide range of life history strategies, however little research has been conducted on the effects of hatchery rearing practices on these strategies. The manipulation of emergence time through modulating egg incubation temperature is common at many hatcheries. Using warm water to induce early emergence and ponding provides extended growth periods for the juvenile fish. In contrast, cold water incubation, results in later emergence, smaller size at age, and a closer match to wild fish rearing templates. We designed an experiment to assess how different emergence times might affect smolt timing in Yakima River spring Chinook salmon. Fry were ponded at photoperiods matching those found in December, February, and May; matching the range found in both cultured and wild populations. In addition three different feeding regimes (low, high, satiation) were integrated into the experiment. Early emerged, fast growing fish were found to smolt in the autumn as underyearlings. In contrast, no late emerging fish were found to smolt in the autumn. Thus, the timing of smolting in mid-Columbia spring Chinook is plastic and dependent on relative emergence timing and post-emergence growth. These results have implications with regard to both hatchery rearing practices and global climate change.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Steve	Starcevich	Oregon Department of Fish and Wildlife	steve.starcevich@oregonstate.ed

Presenting Paper *Student: False*

Co-Authors

Stephanie	Gunckel	Oregon Department of Fish and Wildlife
Steve	Jacobs	5417574263

Title

Freshwater residence of adult Pacific lamprey in a coastal Oregon river basin

Abstract

The freshwater residence of adult Pacific lamprey remains largely undescribed, particularly in Oregon coastal streams. Lamprey are thought to hibernate in freshwater before spawning; but the location, duration, and timing of hibernation are undocumented. To address this data gap, we used radio telemetry to investigate freshwater migration, and the timing, location, and duration of hibernation of adult lamprey in the Smith River (Umpqua River basin). We captured adult lamprey for radio tagging and to estimate abundance in the fish ladder trap at Smith River falls (RK 48) from April to July in 2006 and 2009. In both years, we estimated 3,200 lamprey migrated upstream of the falls. In 2006, 40 lamprey were radio-tagged; 18 were tracked through the hibernation period and 22 were preyed upon or lost to an unknown cause during upstream migration. In 2009, we radio tagged 50 lamprey; 6 spawned in May and June, 9 were preyed upon during upstream migration or lost for unknown reasons. We are currently tracking 35 hibernating lamprey. Individuals began hibernating from June through August, though some movement was associated with the first high flows of the winter. In 2007, they emerged from hibernation in April. Hibernation locations were distributed in the main stem 3 to 72 km upstream of Smith River falls and 3 fish hibernated in the 2 largest tributaries. Lamprey (N=55) hibernated in slow water habitats under boulders (61%) and bedrock (39%) and generally at the modal depth of the habitat unit. To evaluate the effects of radio tagging in 2009, we PIT tagged all radio-tagged lamprey plus 56 others and installed a detection antenna at RK 67. Radio tagging, relative to PIT tagging, did not significantly affect short-term survival or movement into the upper basin.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Matthew	Stinson	Department of Microbiology, Oregon State University, Corvallis, Oregon, USA	stinsonm@onid.orst.edu

Presenting Poster Student: True

Co-Authors

Stephen	Atkinson	School of Chemistry & Molecular Biosciences, The University of Queensland, S Lucia, QLD 4072, Australia
Jerri	Bartholomew	5417371856

Title

Exploring the Genotypic Variation of Ceratomyxa shasta in the Pacific North West

Abstract

A myxozoan parasite Ceratomyxa shasta endemic to the Pacific North West causes various degrees of mortality among local salmonid stocks. Recently a section within the ribosomal DNA, the internal transcribed spacer region-1, was found to have multiple polymorphic loci correlating to four distinct genotypes (I, II, III, and 0) based on a trinucleotide repeat. These different genotypes in turn have been shown to be host specific and have prompted us to re-evaluate this parasite in other positive drainages. With many dams being subjected to removal, or upgraded so that fish can migrate beyond the dams, there is the potential for introducing previously isolated genotypes into new habitat. Sentinel exposures in the Willamette and the Deschutes Rivers of the Columbia Basin with a variety of native trout and salmon species were used to assess the effects of these specific genotypes. Additionally, water samples from these sites and returning adult spawners to the Columbia Basin were also collected. Data thus far from the Willamette and Deschutes Rivers is in agreement with previously documented parasite-host interactions. This information can help fisheries managers develop new stocking strategies, further emphasizes the need to restrict fish movement between watersheds, as well as the potential effects of dam removal.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Suzanna Stoike Oregon State University slstoike@gmail.com

Presenting Poster Student: True

Co-Authors

Selina Heppell Oregon State University

Title

"Returning to depth: Short-term behavior and survival of rockfish after venting"

Abstract

The long-term sustainability of local stocks and fisheries depends on collaborative research to improve the understanding of fish movement and survival. In Port Orford, the live fish fishery has increased rapidly over the past decade. As a precautionary measure ensuring sustainability, fishermen proposed a conservation effort to release gravid female rockfish. The fate of these released BOFFFFs (big old fat fecund female fish) is unknown. We initiated a collaborative research project with local fishermen to investigate the short-term survival of these BOFFFFs.

The study looks at survival of gravid rockfish after release. Rockfish are prone to barotrauma (swim bladder expansion), and releasing BOFFFFs is thought to sustain the effective population by allowing those fish to produce healthier offspring (Berkeley et al. 2004). Venting the air bladder is thought to reverse barotrauma and increase survival. Fish released for conservation purposes are an economic loss to fishermen, as they are caught within regulation and could be harvested. Bigger fish deliver higher prices. If survivorship is low, this conservation effort may increase mortality as fishermen release fish then continue to fill their quota. If survivorship is high, however, there are longterm economic gains.

In coordination with a tagging program short-term survival will be investigated using submergence cages and underwater video. Survival is based on behavioral observations of vented fish, including 1) righting of body, 2) resting on cage parameters or actively swimming, 3) Ability to exit the cage within 3 seconds, 4) Righted position but apparent visual impairment, 5) Position exiting the cage (Hannah and Matteson 2007).

Cooperative research efforts encourage continued participation by fishermen in local management efforts. This project will encourage Port Orford's fleet in becoming engaged in local science and monitoring. As management adopts a more ecosystem-based approach, involvement of communities becomes increasingly relevant to successful monitoring and management.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Eric Strecker Geosyntec Consultants estrecker@geosyntec.com

Presenting Paper *Student: False*

Co-Authors

Title

Urban Stormwater Management and TSalmon

Abstract

Our understanding of the impacts of urban runoff on receiving waters physical integrity, water quality and biology, including Salmonids, has increased significantly. In addition our understanding of the ability of stormwater Best Management Practices (BMPs) to mitigate these impacts has also increased. This paper will present a brief overview of impacts of urbanization on stream systems. The paper will present in more detail our knowledge of the ability of BMPs to mitigate the impacts. Urbanization can significantly alter the hydrology of urban streams, including changes to runoff volumes and rates, evapotranspiration, and deep infiltration. To date most of the focus has been on runoff volumes and rates with more recent attention to increasing deeper infiltration as well. However, there has been a general lack of considering the overall water balance when selecting and designing BMPs to address physical stream impacts. Emphasis on infiltration can lead to groundwater recharge that is higher than natural for example. This can particularly occur when irrigation is considered (often ignored). Also discussed are strategies for addressing stream integrity, including consideration of the appropriate mix of on-site, regional, and instream measures that should be considered based upon a watersheds and stream conditions. Water Quality is also a major factor for the ability of urban streams to support salmonids. The author will present performance data from recent efforts such as the International BMP Database (www.bmpdatabase.org) and Northwest compilations (WashDOT "BMP Effectiveness Assessment for Highway Runoff in Western Washington, 2008") and compare the observed water quality results of BMPs to salmonid tolerance levels. Finally, suggestions regarding the importance of consideration of the appropriate unit processes to consider for both flow management and treatment of runoff will be suggested.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Burke	Strobel	Portland Water Bureau	burke.strobel@ci.portland.or.us

Presenting Poster Student: False

Co-Authors

Title

A Rotating Trap Site Design to Monitor Smolt Productivity at Both the Population and Tributary Scale in the Sandy River, Oregon

Abstract

Monitoring smolt production can benefit a number of management efforts, including viability analyses and adaptive restoration. Given limited resources, however, managers face potential tradeoffs between collecting smolt information that is meaningful at the population scale (e.g. enumerating smolts at the mouths of large rivers) or at a scale that is most meaningful to individual restoration efforts (e.g. enumerating smolts in tributaries). Partner entities in the Sandy River basin, Oregon, are trying to bridge this gap by implementing a long-term monitoring plan in that river which rotates sampling sites from year to year, targeting coho and steelhead smolts.

The basin-wide effort, initiated in 2009, coordinates the rotation of six to seven smolt traps among twelve sites. Estimates will be generated for each site in off-years using both data from on-years at the respective site and from other sites in that same year. The total index area represents 55% of anadromy, but 97% of clear-water streams in the basin and closely corresponds geographically with existing coho and steelhead adult spawner surveys. Results will include trends in smolt production at both the index scale and individual stream scale, trends in freshwater productivity at the index scale, and smolt quality data at the stream scale.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Adam	StSaviour	Oregon State University/ USGS	adam.stsaviour@oregonstate.edu

Presenting Poster Student: True

Co-Authors

Stan	Gregory	Oregon State University
Matt	Mesa	USGS, Western Fisheries Research Center, Columbia
Gary	Scoppettone	USGS, Western Fisheries Research Center, Reno Field Station

Title

Rigid feeding behavior of Moapa dace Moapa coriacea: A Drift Manipulation Experiment

Abstract

The headwaters of the Muddy River, known as the Warm Springs area, is located in Moapa, NV. It is home to a host of endemic fish and invertebrate species. A tremendous effort is underway to conserve these species, especially Moapa dace, Moapa coriacea. M. coriacea is an endangered thermophilic minnow that primarily feeds on drift (Scoppettone et al. 1992, Great Basin Naturalist 52, no. 3: 216-225). The overriding objective is to understand how M. coriacea will respond to environmental changes caused by groundwater pumping and habitat alteration. A drift manipulation experiment was conducted to investigate if M. coriacea are rigid in their drift feeding strategy or if they can exhibit feeding plasticity in response to changes in food availability. Observations were recorded for 32 individual M. coriacea at five different drift treatment levels. M. coriacea fed on drift 10 times more frequently than benthos. They picked more drift items as the drift level increased, 50% more than the control under supplemented conditions (200% of natural drift). Proportional success of prey-capture increased linearly with increasing drift level. Benthic feeding remained a small part of overall feeding activity despite drift level. These results suggest that M. coriacea are rigid in their feeding behavior and would not adapt well to reductions in food availability over the long-term. This drift manipulation study is part of a larger food web analysis that uses stable isotopes to understand nutrient cycling and quantifies food availability throughout the Muddy River system. The implications of this study are to help us better understand how anthropogenic activities affecting the environment might affect Moapa dace, and how to steer habitat restoration efforts in a way that promotes a productive food web.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Erik Suring ODFW Erik.Suring@oregonstate.edu

Presenting Paper *Student: False*

Co-Authors

Title

Using the complete life-cycle in analyzing limiting factors.

Abstract

The greatest insight into a specific limiting factor may be found in examining the entire life history of an organism. The Oregon Department of Fish and Wildlife Salmonid Life-Cycle Monitoring Project has estimated marine and freshwater survival for coho salmon at eight sites for over ten years on the Oregon coast as well as conducting paired watershed restoration studies. Our results show that coho smolt production is affected by multiple factors that may vary from site to site and year to year, the effect of which may mask the benefits of habitat restoration unless multiple life history stages are monitored. We have begun using PIT tags and mobile detectors as a less expensive method to partition freshwater survival, potentially adding greater sensitivity to limiting factors analysis.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Frederick J.	Swanson	Pacific Northwest Research Station, 3200 Jefferson Way, Corvallis, OR 09331	fswanson@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Title

Reflections on Legacies in Nature and Human Thought

Abstract

The world we live in today is an accumulation of legacies from the past. What we do today as citizens, scientists, agency "-ologists", educators leaves a legacy. As a geologist, I am a student of history; as a citizen and parent, I'm concerned about the future. Many aspects of my career have concerned legacies. The 1980 eruption of Mount St. Helens brought biotic legacies into sharp focus as a stark, seemingly-devastated landscape sprang to life with surviving organisms. Around 1990 this image led Jerry Franklin to propose "New Forestry", including leaving live and dead legacies in cutting units – a significant departure from clearcutting and broadcast burning so common in those days. The central notion was, "Focus on what you leave on a site rather than what you take away." In the early 1990s we took this perspective to the landscape level by using fire history to set the spatial pattern, frequency, and severity of cutting in the Blue River Landscape Plan, which includes cutting rotations as long as 260 years. The notion was to emulate the legacies of the historic wildfire regime. More recent studies of wood in streams of the Andrews Forest reveal legacies of clearcutting manifest as low levels of in-stream wood that have persisted for 50 years in stream reaches lacking the capacity to transport big wood downstream. In larger channels the effect of locally limited sources of large wood are smeared out by wood transport during floods. These experiences have prompted collaboration with the creative writer community called Long-Term Ecological Reflections to leave a legacy of creative expression about the character of the natural world and our place in it. As with other legacies, it is impossible to know where this will lead.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Nikki	Swanson	Willamette National Forest	nswanson@fs.fed.us

Presenting Paper *Student: False*

Co-Authors

Title

Working Together to Restore Habitat above USACOE Dams on the Willamette National Forest

Abstract

*Nikki Swanson, Corey R. Lewellen, Ray Rivera, Doug Larson, Darren Cross, and KC Briggs

USDA Forest Service, Willamette National Forest, Supervisors Office, 3106 Pierce Parkway, Springfield OR, 97477

Upper Willamette spring Chinook salmon (Oncorhynchus tshawytscha), Columbia River bull trout (Salvelinus confluentus) and Upper Willamette winter steelhead (Oncorhynchus mykiss) are all protected by the Endangered Species Act (ESA) and listed as threatened. Oregon chub (Oregonichthys crameri) are also protected by the ESA and listed as endangered. The ESA listing provides significant protection and guidance in the recovery of these species and their critical habitat. The Willamette National Forest manages and protects over 580 miles of combined critical habitat for the three salmonid species. On an annual basis the Willamette National Forest and our partners complete 30-50 miles of fish habitat restoration, 1-2 aquatic passage enhancement projects, 50-100 miles of high aquatic risk road stabilization and invests on average one million dollars to aid in the recovery and restoration of ESA species and their critical habitat. A vast majority of the critical habitat is above large barrier flood control dams that are owned and operated by the U.S. Army Corp of Engineers. In 2008 the U.S. Army Corp of Engineers received biological opinions from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on the effects from operating their dams within the Willamette Basin. The biological opinions contain a Reasonable and Prudent Alternative that include significant improvements to their infrastructure leading to restoration of natural flow and temperature regimes enhancing recovery efforts for listed fish species. The Willamette National Forest has been working diligently to protect and enhance the ESA critical habitat and is looking forward to working in conjunction with the U.S. Army Corp of Engineers on the recovery of these species.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Rick	Swart	Oregon Department of Fish and Wildlife	rick.swart@state.or.us

Presenting Poster Student: False

Co-Authors

Title

Fish Photography 101

Abstract

People are captivated by fish and their images. This infatuation with fish helps explain why millions of people flock to aquariums every year – to discover and marvel at the strange and miraculous creatures that occupy the world's oceans, lakes, ponds and rivers. Although 70 percent of the earth's surface is covered with water, most human beings never get to see firsthand the aquatic world or its inhabitants. One way to improve public awareness and appreciation of the aquatic world is through underwater photography and videography. Compelling images of fish can be powerful tools for communicating to a variety of audiences through news releases, brochures, displays, educational and scientific presentations, technical reports, television programs and Web sites. Fishery professionals are uniquely positioned to collect, archive and distribute such images and thereby contribute to better public awareness and understanding of fish and related topics. This presentation will cover the fundamentals of fish photography, including an overview of photo and video equipment, the basics of composition and lighting, an introduction to photo and video editing techniques, and archiving.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Mark	Teply	Cramer Fish Sciences	markt@fishsciences.net

Presenting Paper *Student: False*

Co-Authors

Steve	Cramer	Cramer Fish Sciences
Randy	Ericksen	5034919577

Title

Quantifying the influence of elevated stream temperatures in limiting juvenile spring Chinook populations in the Willamette Basin, Oregon

Abstract

We present a quantitative framework, based on exposure analysis models, to predict the influence of elevated stream temperatures on juvenile spring Chinook populations throughout the Willamette Basin. The framework estimates the proportion of the population represented by different life histories in specific areas of the basin by two-week time steps. These proportions are informed by juvenile migration monitoring at specific stations throughout the basin. We integrate the patterns of fish presence with observed spatial and temporal patterns of elevated temperature in the Willamette Basin to calculate the proportion of the population exposed. Global sensitivity analysis was performed to identify the most important factors in the model. We found exposure of juvenile spring Chinook to elevated temperatures (>18°C) to be very low (<20%). This is largely explained by a high correlation between the spawning distribution and the extent of colder streams, and due to observed emigration patterns in which juvenile spring Chinook salmon tend to avoid periods of elevated temperatures. A detailed look at joint variability underlying stream temperature and migration timing provides understanding about the relative influence that elevated stream temperatures may have on carrying capacity and natural selection. Findings of this study can also provide guidance for restoration planning in the basin.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Laura Tesler ODFW laura.tesler@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Fishes of Bonaire

Abstract

In November 2008, Author journeyed to Bonaire with camera in hand to take pictures of reef fish in a variety of habitats and dive sites. Strictly saltwater photos, but very pleasing to the eye. Tips and Techniques revealed for getting good shots.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kody Thurgood Oregon Department of Water Resources Kody.J.Thurgood@wrd.state.or.u

Presenting Paper Student: False

Co-Authors

Title

Oregon Water Law

Abstract

Western Water Law
Prior Appropriation Doctrine
Whiskey's for Drinkin'Water's for Fightin'

New & Changing Needs
Same Old Water Quantity
Water Management Pressures
•87,000 water rights issued
•Growing population
•New industries / growing energy demands
•Endangered Species Act
•Public demands for clean water
•Public demands for recreation
•Water not available to meet needs
•Historic needs and uses changing

What a Water Right Is Not
•A Right for a Quantity of Water
•A Right to Use Any Way the Holder Chooses
Water Rights
Elements of a Consumptive Water Right
•Priority
•Beneficial use without waste
•Point of diversion or appropriation
•Place of use
•Rate & duty
•Season

Water Use Permitting Decisions
•New Surface Water Permits
–Issued only if water available
–Some exceptions for household uses
–Instream rights issued without regard to water availability
–Contemporary priority date

Water Use Permitting Decisions
•New Ground Water Permits
–Issued if not in hydraulic connection to surface water, or
–Water available is hydraulically connected surface water

LOCAL WATER MASTER presenter)http://www.wrd.state.or.us: Watermaster duties
•Enforce water laws
•Monitor well drillers
•Maintain water right and well records
•Inspect reservoir dams for safety
•Perform streamflow measurements
•Regulate water in times of shortage based on priority dates of water rights
Local Issues
•Water rights
•Ground water
–Exempt use, mostly domestic
–½ ac lawn and garden, commercial use
–Multiple domestics on same well
•Springs
–Springs vs. wells

Local Issues
•Surface water
–Harder to get
–Water availability limitations
–Domestic and human consumption rights
•Storage
–50% vs. 80% availability

Allocation of Conserved Water Program
Allocation of Conserved Water
•Voluntary program
•Allows "spreading" to additional uses
–additional out-of-stream use
•provides economic return on investment
–creates instream water right

•NOT required when firming up supply to existing lands

Allocation of Conserved Water Process
Allocation of Conserved Water
•Applies to both rate & duty
•If injury, then quantity of water reduced to mitigate injury

Allocation of Conserved Water: Allocation formula
What is Injury?
•Another right will receive less water
–Change in stream conditions from those existing at the time of appropriation
–Injured right usually the junior right
Injury Evaluation
•Conserve rate & duty (if applicable)
•Theoretical injury

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Vince	Tranquilli	None	vince.tranquilli@gmail.com

Presenting Paper *Student: False*

Co-Authors

Title

DVD of Upper Willamette River Bull Trout Spawning Behavior

Abstract

A fun DVD that captures Upper Wilamette River bull trout spawning behavior in 2008 and 2009.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Erick	Van Dyke	Oregon Department of Fish and Wildlife	erick.s.vandyke@state.or.us

Presenting Paper *Student: False*

Co-Authors

Title

Salmon in the Portland Metropolitan Area: a compilation of fish investigations conducted by Oregon Department of Fish and Wildlife

Abstract

Regulations associated with endangered species legislation prompted partnerships with Portland Metropolitan Area municipalities and Oregon Department of Fish and Wildlife (ODFW) to determine fish distribution and stream condition in urban water bodies. We compiled fish inventories conducted by ODFW's Ocean Salmon and Columbia River Program in the Portland Metropolitan Area, 1993-2009. We will describe fish abundance and distribution in wadeable streams with a special focus on Pacific salmon and trout. Our discussion will include a characterization of aquatic habitat availability and associated fish use. We will share results from an indexing approach that uses fish composition to monitor stream condition, and will discuss strengths and weaknesses associated with the method. These collaborative efforts demonstrate the efficacy of informing actions aimed at monitoring and enhancing aquatic ecosystem health in urban areas.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Daniel	Vandyke	Oregon Department of Fish and Wildlife	daniel.j.vandyke@state.or.us

Presenting Paper *Student: False*

Co-Authors

Charles	Fustish	Oregon Department of Fish and Wildlife

Title

The small stream, urban stream, and intermittent stream project

Abstract

The Oregon Department of Fish and Wildlife's Salmon Trout Enhancement Program (STEP) is conducting a project of increased monitoring and outreach on small streams, urban streams, and intermittent streams of the Rogue Watershed. Project objectives include: creating awareness of the fish resources using these streams; encouraging good stewardship among creekside landowners; gaining additional fish distribution information; and developing interest and support for habitat protection and restoration activities. Using upstream migrant hoop traps, volunteers survey the relative abundance of salmon, trout, and other native species during winter. The traps are fished between October and April, when streamflows allow fish to re-enter streams, and high winter flows force fish to seek refuge habitat. Trapping allows volunteers to learn about and have contact with native fishes. The catch data and restoration opportunities that have been identified are communicated to the public. Outreach has occurred primarily through media contacts during the trapping season. Information has also been shared with local conservation groups, angling groups, watershed council members, and public meetings have been held. Native species captured in the traps include juvenile coho, steelhead, chinook, and cutthroat trout; Klamath smallscale suckers, speckled dace, sculpin, crayfish, western pond turtles, and rough-skinned newts. Adult steelhead have been captured. Exotic species captures include Umpqua pikeminnow, green sunfish, brown bullheads, bluegill, Gambusia spp., ruby fathead minnows, pumpkinseed, ringed crayfish, and red swamp crayfish. Project surveys have added to species distribution information on 10 streams (Mingus, Lazy, Larson, Gore, Hamilton, Dog, Vannoy, Brown Gulch, Whetstone, Military Slough). Surveys have also confirmed barriers to juvenile migration on four streams (Sand, Lazy, Larson, Brown Gulch). The project has resulted in the removal of a former irrigation diversion, along with planned restoration at two culvert barriers and riparian plantings.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Ian	Waite	U.S. Geological Survey	iwaite@usgs.gov

Presenting Paper *Student: False*

Co-Authors

Steven	Sobieszczyk	U.S. Geological Survey
Kurt	Carpenter	503-251-3215
Andrew	Arnsberg	Bureau of Environmental Services, City of Portland
Henry	Johnson	U.S. Geological Survey
Curt	Hughes	U.S. Geological Survey
Michael	Sarantou	U.S. Geological Survey

Title

Assessment of Aquatic Biological Communities along a Gradient of Urbanization in the Willamette Valley Ecoregion

Abstract

From late 2003 through summer 2004, the U.S. Geological Survey's National Water Quality Assessment Program sampled 28 streams within the Willamette Basin to investigate effects of urbanization on aquatic biology (fish, macroinvertebrates, and algae), habitat, and water chemistry. The 28 watersheds fall along an urban land use gradient index (Urban Intensity Index, 0 to 100, lowest to highest) based on land use and census data developed for this region. Watershed areas range from 13 to 96 square kilometers and contain greater than 20 percent of the Willamette Valley ecoregion. Ten streams were sampled for water chemistry six times during study period. The other 18 streams were sampled twice for water chemistry—once during high sustained flow, and once during summer low flow. Fish and macroinvertebrates showed a linear decrease in numbers, quality and diversity as urban intensity increased, with no detection of a threshold. Population density and the urban intensity index were highly correlated with fish and macroinvertebrate assemblage patterns among sites. Variables that seemed to be important in explaining the decline in biological assemblages were water temperature, dissolved oxygen, stream gradient, the total concentration of pesticides and indices of toxic contaminants. We also tested two groups of highly developed sites, both with high percent-developed landuse of agriculture plus urban, but one with relatively low population density (low urban intensity) and the other with high population density (high urban intensity). We could not statistically detect any difference based on biological assemblages and stream chemistry between these highly developed watersheds even though the amount of urbanization was different between the two groups of sites. Agricultural and urban land use have similar impacts to the stream biota, however, higher concentrations of herbicides were generally found in streams with significant agricultural land use and higher amounts of insecticides in urban areas.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Shelby	Warren	Oregon Department of Fish and Wildlife	swarren@eou.edu

Presenting Poster Student: False

Co-Authors

Lance	Clarke	Oregon Department of Fish and Wildlife
Michael	Flesher	5419623764
Richard	Carmichael	Oregon Department of Fish and Wildlife

Title

Smolt-to-Adult Survival and Stray Rate of Hatchery Summer Steelhead That Are Forced or Volitionally-Released Following Acclima

Abstract

We compared the smolt-to-adult survival (SAS) and straying performance of six groups of hatchery summer steelhead that were either force-released (FR) or volitionally-released (VR) as juveniles into northeast Oregon streams following an acclimation period. A two week volitional release started immediately after the force release date. To examine whether juvenile outmigration characteristics could explain our observed SAS and stray rates, Passive Integrated Transponder (PIT) tags were implanted into fish from each release group and later detected at Lower Granite Dam (LGD) on the Snake River. Across all releases, travel time to LGD was only 3% faster for FR groups than for VR groups, a difference that was not statistically significant. Volitional releases had an average survival to LGD that was 11% higher than FR groups; however, this difference was also not statistically significant. Outmigration travel time and survival results suggest that either FR individuals did not begin migration immediately following force-out or migrated at a different rate than VR fish, resulting in similar travel times and arrival dates at LGD. We used coded-wire tag recoveries from returning adults to estimate SAS and stray rates between the two release strategies. Although average SAS across the entire study was 6% higher for FR groups than VR groups, the difference was not significant. Additionally, no significant difference in stray rate was detected between the release strategies. Our study indicates that a volitional release following acclimation did not improve SAS or reduce straying in the summer steelhead hatchery program evaluated for this study.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Michele	Weaver	Oregon Department of Fish and Wildlife	michele.h.weaver@state.or.us

Presenting Paper *Student: False*

Co-Authors

Erick	Van Dyke	Oregon Department of Fish and Wildlife

Title

The Dam Diet: an analysis of the diet composition of northern pikeminnow captured directly from The Dalles and John Day dams

Abstract

We evaluated the diet composition of adult northern pikeminnow Ptychocheilus oregonensis captured directly from The Dalles and John Day dams from May to August 2006-2009. We collected digestive tracts from fish captured by The U.S. Department of Agriculture. We chemically reduced each sample in the laboratory, and identified the remaining fish bones to the lowest possible taxon. We will characterize the northern pikeminnow diet and describe species composition of prey, including such notable fish species as juvenile salmonids, American shad, and lamprey. We will compare these results with the diet composition found during earlier evaluation activities of the Northern Pikeminnow Management Program. Our analysis will inform managers and policy makers about diet composition of this native cyprinid in the immediate vicinity of two Columbia River dams.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

DALE	WEBBER	VEMCO Ltd.	dmwebber@vemco.com

Presenting Paper *Student: False*

Co-Authors

DENISE	KING	VEMCO Ltd.
FRANK	SMITH	9024501700

Title

NEW TECHNOLOGY DEVELOPMENTS FOR UNDERSTANDING SPATIAL AND TEMPORAL ACTIVITY PATTERNS OF F IN NATURE

Abstract

Measurements of fish movements, activity, and energetics in nature, has always been technologically challenging. In many species around the world detailed movement and activity information is urgently required for a variety of reasons. Issues related to fishing pressure, habitat degradation, pollutants, and responses to environmental change are just a few of the many applications that require knowledge of the temporal and spatial movement and activity patterns of fish.

Here we describe the development and implementation of a new multi-array positioning system (VPS – VR2W Positioning System) and a new activity acoustic transmitter (V9AP) that can be used in a variety of biological applications to study the behavior of fish in nature. VPS is more suited to a larger variety of applications compared to existing positioning systems that are constrained by cost and equipment deployment limitations (i.e., wire connecting hydrophones). A VPS study can be as small as 1 triangle covering 2500 m2 or less (3 receivers) and up to tens of kilometers2 and greater. To date VPS has been successfully used in small and large area studies in lakes, rivers and ocean environments.

In this presentation we will discuss the design and specifications of VPS, the factors that influence positioning accuracy and we will show examples of various VPS study designs. We will also illustrate how to use an accelerometer transmitter to get the most of your VPS study.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Luke	Whitman	Department of Fisheries and Wildlife, Oregon State University	Luke.Whitman@oregonstate.edu

Presenting Poster Student: True

Co-Authors

McIntosh	Neal	College of Oceanic and Atmospheric Sciences, Oregon State University
Scott	Heppell	Department of Fisheries and Wildlife, Oregon State
Kelly	Benoit-Bird	College of Oceanic and Atmospheric Sciences, Oregon State University

Title

Spatial variation in the distribution and energy density of juvenile walleye pollock in the southeastern Bering Sea

Abstract

Juvenile walleye pollock (Theragra chalcogramma) are one of the primary prey items for bird and mammal predators in the Bering Sea, while the adults support a large commercial fishery. An understanding of the environmental factors that determine walleye pollock distribution and variation in individual energy density is needed to estimate the effects that climate variation may have on pollock and their predators. During the summers of 2008 and 2009, surveys were conducted in three topographic zones (middle shelf, outer shelf, and slope) near the Pribilof Islands in the southeastern Bering Sea. Environmental data collected for each transect included temperature, salinity, depth, dissolved oxygen, green light transmission, and chlorophyll a fluorescence. Additionally, each transect consisted of 10 km of multi-frequency acoustic sampling, a vertically integrated zooplankton net tow, and a targeted oblique fish tow. In 2008, juvenile pollock were found primarily in the middle shelf zone and were dominated by small, young-of-the-year individuals. In 2009, juvenile pollock were significantly more abundant with both large young-of-the-year and year-old individuals found throughout the study area, with substantial aggregations occurring in all three topographic zones. In both years, juvenile pollock distribution was strongly affected by both the biological and physical habitat including relatively low phytoplankton fluorescence, high mesozooplankton biomass, strong water column stratification, low surface temperatures, and high oxygen saturation levels. In addition, the energy density of individual pollock varied spatially, suggesting that juvenile pollock abundance, numerical density, and individual quality as prey are all affected by variation in the environment. A combination of these factors is likely to affect habitat use by predators seeking to optimize their use of this important prey resource.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Molly	Whitney	National Fish and Wildlife Foundation	molly.whitney@nfwf.org

Presenting Paper *Student: False*

Co-Authors

Chris	Furey	Bonneville Power Administration
Todd	Reeve	5417606658

Title

Financial Incentives for Flow Restoration

Abstract

A major effort focused on using financial incentives to increase streamflows in Oregon and the Columbia Basin is the Columbia Basin Water Transactions Program (CBWTP). The Bonneville Power Administration and Northwest Power and Conservation Council started the CBWTP in 2002 with the National Fish and Wildlife Foundation, state water agencies, and local water trusts. Many tributaries in the Columbia Basin are dewatered by legal water withdrawals during the peak growing season, thus causing loss of fish habitat. In some cases these withdrawals cause stretches of streams and rivers to run low – and even dry – with significant consequences for imperiled salmon, steelhead, trout and other creatures. The CBWTP works with its partners in creating permanent acquisitions, leases, investments in efficiency and other incentive-based approaches to assist landowners who wish to restore flows to existing habitat.

Providing financial incentives to put water instream works. The CBWTP has restored over 4.9 million acre-feet over the life of the 244 funded transactions, and additional work continues using water transactions in the basin.

In 2009, the Bonneville Environmental Foundation (BEF) developed a voluntary, market-based approach to help fund stream flow restoration projects called the Water Restoration Certificate (WRC) Program. BEF markets WRCs as a way for households and businesses to take responsibility for their water consumption and return back to the environment an amount of water equal to their own water use. Each WRC that is purchased represents 1,000 gallons of water that is restored to a critically dewatered river or stream during a critical low flow time of year. In its first year, this BEF program supported four instream flow restoration projects in two Pacific Northwest states, and national sales efforts are underway to build a revenue source that can both expand and sustain more flow restoration projects.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author

Meeting: ORAFS10

Thomas	Whittier	Oregon State University	whittier.thom@epa.gov

Presenting Paper *Student: False*

Co-Authors

Alan	Herlihy	Oregon State University
Chris	Jordan	5417544629
Carol	Volk	NOAA Fisheries
Jeannie	Sifneos	Oregon State University

Title

A Landscape Classification to Support the Intensively Monitored Watersheds

Abstract

In the Pacific Northwest (PNW) there are over two dozen Intensively Monitored Watersheds (IMW) projects evaluating restoration methods to support salmonid productivity. A multivariate classification and map of watersheds based on natural landscape characteristics associated with salmonid habitat could potentially allow managers to extrapolate results from the IMWs to other areas, by defining areas with similar natural potential for salmon production. Such a map would facilitate an evaluation of the representativeness of the IMWs and could provide a geographic framework for other salmonid studies. Using principal components analysis (PCA) and clustering techniques, we developed a natural-features classification for the 8,438 sixth-field hydrologic units in the PNW, based on their climate, land form, geology, and stream form characteristics. PCA showed a clear divide between Eastside and Westside landscapes. We then used a divisive clustering technique to divide the Eastside into a Mountains class and a Basins class. Thereafter, we used flexible Beta clustering to develop landscape classes within each of these 3 main classes.
Our preliminary landscape classification has 7 Westside classes, 8 Eastside Basins classes, and 9 Eastside Mountains classes. The thirteen western IMWs are located in five of the seven Westside landscape classes; four of these IMWs span two classes. The nine Eastside IMWs occurred in all 9 Mountains classes. However, all Eastside IMWs included more than one landscape class, which may have implications for how well results from those studies can extrapolated to other stream systems. A portion of the Lemhi IMW was the only occurrence in the entire Eastside Basins Class.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Marc Wicke Tacoma Power mwicke@cityoftacoma.org

Presenting Paper *Student: False*

Co-Authors

Title

The Cushman Project: Unique Fisheries Mitigation for Unique Hydroelectric Facility

Abstract

In January of 2009, a settlement agreement between Tacoma Power, the Skokomish Tribe, and state and federal agencies laid the ground work to end a 28 year relicensing process. The features unique to the Cushman Project that were responsible for the long standing licensing disputes required the development of unique remedies by the settlement parties.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Kevin	Williamson	USFWS Abernathy Fish Technology Center	Kevin_Williamson@fws.gov

Presenting Paper *Student: False*

Co-Authors

Kelly	Reis	Oregon Department of Fish and Wildlife
Jeff	Ziller	5147263515
Denise	Hawkins	USFWS Abernathy Fish Technology Center

Title

Genetic origin of Oncorhynchus mykiss collected from the Upper Willamette River Basin, OR

Abstract

In 1963, Hills Creek Dam was completed on the Middle Fork of the Upper Willamette River, and rotenone was used on much of the upper watershed to remove unwanted fish species. This effort was highly successful in removing the native trout as well as the target species. Hatchery rainbow trout (Oncorhynchus mykiss) have been subsequently planted in both Hills Creek Reservoir and in the tributaries above the reservoir. This management practice was discontinued in the 1990s; however, the influence of hatchery fish on the genetic heritage of contemporary naturally produced rainbow trout above Hills Creek Dam is not known. Using a suite of 17 microsatellite loci, we evaluated the genetic heritage (hatchery vs. wild) of Middle Fork Willamette River and McKenzie River resident rainbow trout populations, and hatchery trout stocks that had been historically planted in both watersheds. Genetic analysis indicates that native resident rainbow trout populations are genetically distinct from hatchery stocks historically planted in each watershed. A notable exception is Gold Lake, a formerly fishless lake in the Middle Fork Willamette River watershed, which appears to be more similar to a collection of Spencer Creek (Klamath River Basin, Klamath County) redband trout used as a proxy for brood stock used to found hatchery trout stocked into Oregon waterways. Including an additional, unevaluated hatchery (Rouge River) stock historically planted in the Hills Creek Reservoir will be necessary to confirm these conclusions.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Jeffrey	Yanke	Oregon Department of Fish and Wildlife	Jeff.Yanke@state.or.us

Presenting Paper *Student: False*

Co-Authors

William	Knox	Oregon Department of Fish and Wildlife
Bradley	Smith	5414263279

Title

Angling mortality of adult steelhead in the Grande Ronde River, OR

Abstract

Anadromous fisheries in the Snake River basin target consumptive harvest of hatchery-origin fish. In these selective-harvest fisheries, mortality impacts occur from both harvest of targeted fish and handling of non-target fish. Currently, Snake River tributary fishery mangers assume post-hooking mortality of wild-origin steelhead is 5%. As part of an effort to select hatchery broodstock from steelhead that returned to the lower Grande Ronde River in fall, we investigated the post-hooking mortality of fish collected by varied angling techniques. Volunteers angled for steelhead during October 2003-2006 using bait, flies, jigs and lures. After landing, fish were placed into a holding tube and anglers recorded gear type used and location of hook. Fish were PIT tagged, transferred to a local hatchery, and held until spring. Of the 410 hatchery-origin steelhead captured during the study, we observed seven mortalities attributed to angling for an overall mortality rate of 1.69% (95% CI = 0.90-2.48%). Eight more steelhead died at the hatchery up to 40 days post-transfer, but we did not attribute these to angling. Our results were consistent with prior studies that concluded hook location was a main driver of mortality. Steelhead hooked in the esophagus and gills had a mortality rate of 50% (n=2) and 100% (n=4), respectively, compared to 0.5% for all other hooking locations (n=402). Of the fish hooked in high-mortality locations, four were caught using bait, one using flies, and one with lures. Although low sample sizes of mortalities limited statistical power, our results suggest that the current assumption of post-release mortality rates is appropriately conservative for estimating non-target fishery impacts to ESA-listed steelhead.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Alan	Yeakley	Portland State University	yeakley@pdx.edu

Presenting Paper *Student: False*

Co-Authors

Title

The current understanding of the urban stream syndrome among streams in the Portland, Oregon metropolitan area

Abstract

As described in a paper by Chris Walsh and others in 2005, the "urban stream syndrome" (USS) is a systematic deterioration of urban stream conditions characterized by flashier hydrographs, elevated concentrations of nutrients and contaminants, altered channel geomorphology and decreased biotic species richness. With the streams in the Portland area serving as a portal to the remainder of the Willamette Basin, healthy urban stream conditions in the Portland metropolitan area are important for salmonid ecology in the Willamette Valley of Oregon. While a comprehensive characterization of the USS for streams would help guide restoration potential and prioritization, data on the state of the USS among streams in the 25 municipalities composing the Portland metropolitan area has remained spotty. A more highly resolved picture on the varying nature of the USS for Portland metropolitan streams may be emerging, however, due to recent research including reports by USGS scientists, peer-reviewed articles by academic scientists at PSU and OSU, as well as gray literature reports by agency scientists and managers at Metro, the City of Portland, Clean Water Services and other area municipalities. Additionally, soon to be published are comprehensive reports on the state of Oregon urban stream water conditions on the parts of the ODEQ and the IMST. Based on these various sources, the state of the urban stream syndrome in the Portland metropolitan area appears varied, with some streams in severe states of decline, while other urban and suburban streams, such as in the Damascus area and in parts of the Tualatin Basin, retain many characteristics of more healthy streams. This talk will attempt to summarize the current state of understanding of the urban stream syndrome for Portland metropolitan streams and suggest areas where more research and monitoring needs to be conducted.

Oregon Chapter AFS Annual Meeting 2010 Abstracts

Author Meeting: ORAFS10

Nikolas Zymonas Oregon Department of Fish and Wildlife nik.zymonas@oregonstate.edu

Presenting Paper Student: False

Co-Authors

Title

Research and Management of Listed Fishes in the Desert - A Story of Predetermination and Desire

Abstract

Flow regulation is a pervasive element in research and management of western fishes. A particularly dramatic case involves desert rivers that contain listed species but may become completely dewatered over extended reaches. Unique physical and biological characteristics of these river systems present challenges for their study, but ideally, sound science should inform management decisions. Political realities associated with high demand for limited water supplies commonly influence management options, but when politics invade the science, the result is an intriguing story set in a context of combat biology, with lessons on conservation of threatened fishes and reliability of peer-reviewed scientific literature.