

**CHANGE AND CONTINUITY:
CELEBRATING 50 YEARS OF FISHERIES IN
THE WEST**



THANK YOU TO OUR MEETING SPONSORS

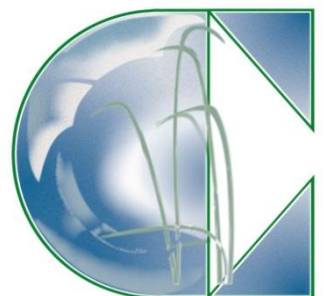
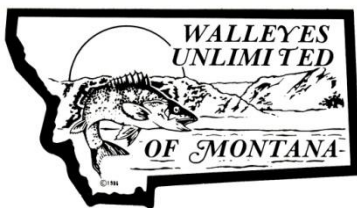
STURGEON (\$3,000 OR >)



BULL TROUT (\$2,000 OR >)



WESTSLOPE CUTTHROAT TROUT (\$1,000 OR >)



CONFLUENCE

SAUGER (\$500 OR >)



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Koessler Lake, South Fork Flathead River drainage, Montana. Photo by Lynda Fried

LETTERS OF WELCOME

Greetings AFS members and guests,

Welcome to Big Sky Country! Thank you for joining us at the University of Montana in beautiful Missoula, Montana, for the 42nd annual meeting of the Western Division of the American Fisheries Society (AFS) and the 50th annual meeting of Montana Chapter of AFS. This is the Montana Chapter's golden anniversary and we plan to showcase and commemorate a half-century of exceptional science, stewardship, and dedication to the aquatic resources our members, residents, and guests hold dear. We welcome the many active and retired fisheries professionals who accepted our invitation to celebrate this important milestone.

The theme of this year's meeting is "Change and Continuity: Celebrating 50 Years of Fisheries in the West." Though AFS was formed in 1870, many chapters have recently celebrated their 50th anniversaries. We owe a great deal of gratitude to the biologists, managers, educators, and many others who have dedicated themselves to the research, management, and conservation of our aquatic resources. This meeting is a wonderful opportunity to reflect on our collective history while honoring and learning from those who came before us. From improvements in our scientific understanding and advancements in technology and statistical methods, to helping shape and respond to changing societal values, we all share in a rich and honorable professional legacy. And while the past half-century has been marked by significant changes, the vital role served by the American Fisheries Society has remained a constant: by promoting the professional development and education of our members, advancing fisheries and aquatic science, and informing policy-making and public perception, we have enabled the conservation of fishery resources and aquatic ecosystems and the many benefits they provide.

We are immensely proud of this meeting's technical program quality, and thank the meeting planners, plenary speakers, and oral and poster presenters for their contributions. We are also excited about the many extracurricular activities that will take place during the week, including several unique field trips, a stimulating tradeshow and social, a special off-site celebration of the Montana Chapter's 50th anniversary, and several student-organized events. This will all culminate in a grand banquet and auction on Thursday night.

As we come together during these few days in Missoula – exchanging information, laughing and debating while sharing science, telling stories, renewing old acquaintances and making new ones – please take time to reflect on the value and privilege of being able to openly share the work we are passionate about, serving as a voice for sound science and resource management. Help us celebrate the rich history of our profession and ensure that AFS's commitment to professional excellence, open communication, and public service continues uninterrupted into the future.

We look forward to celebrating with you, honoring the joint legacy of the Western Division AFS and the Montana Chapter, and enjoying the company and good cheer of colleagues and friends.

Most Sincerely,



Cleveland R. Steward III
Cleveland R. Steward III
President
Western Division AFS



Leslie G. Nyce
Leslie Nyce
President
Montana Chapter AFS



B. Missildine
Brian Missildine
President Elect
Western Division AFS



Amber Steed
Amber Steed
President Elect
Montana Chapter AFS

LETTERS OF WELCOME

Welcome to The Montana Chapter of the American Fisheries Society 50th Anniversary Celebration

American Fisheries Society



Join us in celebrating the Montana Chapter's exceptional science, stewardship and dedication to our Big Sky Country's aquatic resources. Fifty years ago, on May 25, 1967, C. J. D. Brown and George Holton sent a letter to fisheries workers in Montana to poll the interest in creating the Montana Chapter of the American Fisheries Society. Forty-one fisheries workers from around the state responded with a resounding, YES. The first official Chapter meeting took place at the Montana Club in Helena, MT in November of 1967. Robert Hutton, AFS Executive Director, gave the keynote address, "What makes a successful chapter." Since that time, the Chapter has served as a forum for Montana's fisheries professionals to communicate with each other and to advocate for the use of science in sound decision making in the management of our diverse aquatic resources. We have come a long way in the last 50 years. In 1989, our Chapter was honored with the Western Division Chapter of the Year Award followed up with back to back American Fisheries Society Chapter of the Year Awards in 1990, 1991. From its original 15 members to our current 220 members, the Montana chapter continues to grow in strength and diversity.

The last half-century has brought challenges in fish species, aquatic resource, and user group fishery management within the backdrop of an increasing human population. Chapter members have served and participated throughout the American Fisheries Society, assisting our Chapter's efforts in aquatic resource science and management and also being recognized for those efforts on several occasions. We have made significant gains, and continue those efforts in biological understanding, as well as evolving and improving technological, predictive and analytical capabilities.

We have scheduled all of the 50th Anniversary events within a 24 hour period, in hopes that will help facilitate meeting attendance for many of our past members. The Chapter will be hosting an anniversary booth throughout the Trade Show showcasing memorabilia, and highlighting past events and accomplishments of our Chapter. On the afternoon of Wednesday, May 24, we will present the Montana Chapter's 50th Anniversary Symposium. Past Chapter presidents will review the highlights and challenges of the past five decades in an informative and sometimes entertaining retrospect. Later that same day, plan to join us for our Anniversary Social along the banks of the Clark Fork River at Caras Park, a landmark Missoula outdoor venue. Dance to the Big Sky Mudflaps, a favorite Montana band, and eat delicious barbeque style food provided by the Notorious PIG, another of Missoula's favorites. While you are there, try your luck at the Corn-Hole tournament, a fund raiser for the Chapter. No doubt, local microbrews will also be available to quench your thirst from all that dancing and socializing. This Social will certainly be a great opportunity to meet new and of course visit with old friends and colleagues. Finally, on Thursday, May 25 at 12pm the Chapter's Business Luncheon will be held. Along with annual Chapter business, the 50th Anniversary Committee will also have the stage. Who knows what will happen?

MTAFS 50th Anniversary Committee

ADDITIONAL MEETING SPONSORS



***Montana Fish,
Wildlife & Parks***



BITTER ROOT
Water
FORUM

PLANNING COMMITTEES

2017 Western Division of the American Fisheries Society Annual Meeting Planning Committees

GENERAL MEETING ORGANIZATION

Cleve Steward – President, Western Division AFS

Leslie Nyce – President, Montana Chapter AFS

AWARDS

Adam Sepulveda - Chair

Tom Keegan

ARRANGEMENTS AND ACCOMMODATIONS

Michele Weaver - Chair

Pat Saffel

Andrew Whiteley

BUDGET AND FINANCE

Travis Neebling Co-chair

Scott Opitz – Co-chair

SOCIALS AND ENTERTAINMENT

Lisa Eby – Co-chair

Michelle McGree – Co-chair

Tracy Wendt – Co-chair

Jon Hanson

Paul Hooper

Paul Parson

David Schmetterling

Jeff Shearer

Scott Spaulding

Adam Sepulveda

MTAFS 50TH ANNIVERSARY

Amanda Bryson – Co-Chair

Joe DosSantos – Co-Chair

Chris Clancy

Jim Darling

Wade Fredenberg

Janet Hess-Herbert

Chris Hunter

Larry Peterman

Brad Shepard

PROGRAM

Brian Missildine – Co-chair

Amber Steed – Co-chair

Robert Al-Chokhachy

Peter Brown

Laura Burckhardt

Chris Guy

Mike Meeuwig

Eric Oldenburg

Pat Saffel

Will Schreck

Lora Tennant

Jackie Watson

PUBLICITY AND OUTREACH

Leslie Nyce – Co-Chair

Amber Steed – Co-chair

Tracy Wendt – Co-chair

Jim Bowker

Mary Beth Loewen

Al Zale

EVENT MANAGEMENT AND REGISTRATION

Alison Colotelo – Co-chair

Scott Opitz – Co-chair

Amanda Bryson

Kellie Carim

Nathan Cook

FUNDRAISING

Will McDowell – Co-chair

Earl Radnoski – Co-chair

Dan Brauch

Addie Dutton

STUDENT ACTIVITIES

Addie Dutton – MSU Co-chair

Marty Etchemendy – UM Co-chair

TRAVEL GRANTS

Casey Hackathron

Brian Missildine

Jackie Watson

TRADE SHOW

Debbie Oja – Co-chair

Ron Pierce – Co-chair

VOLUNTEERS AND STUDENT WORKERS

Zach Klein

Bruce Roberts

WEBSITE

Katie Rayfield

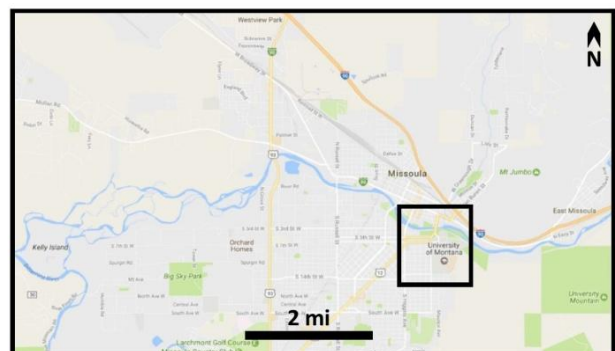
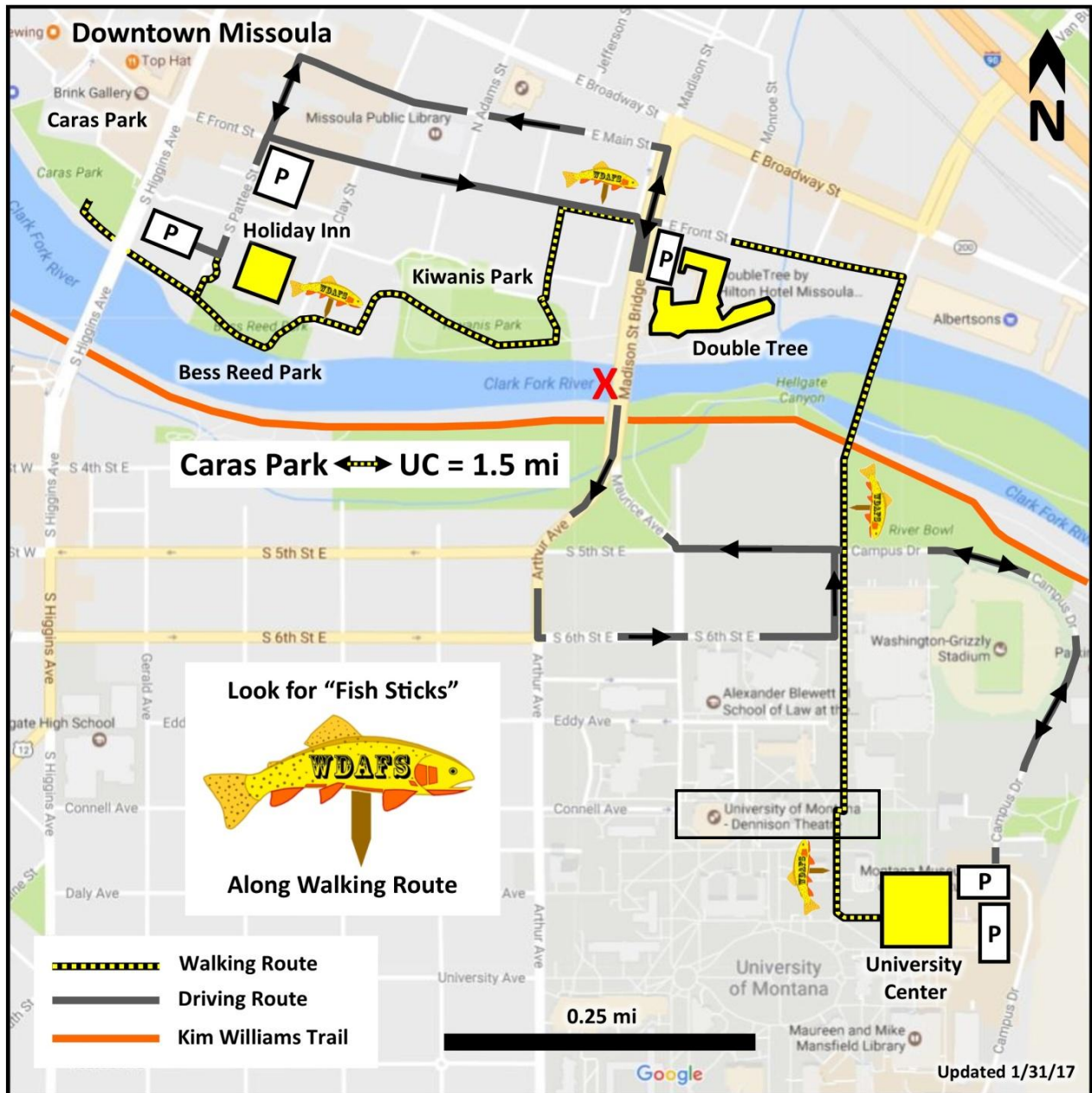
SWAG

Travis Horton

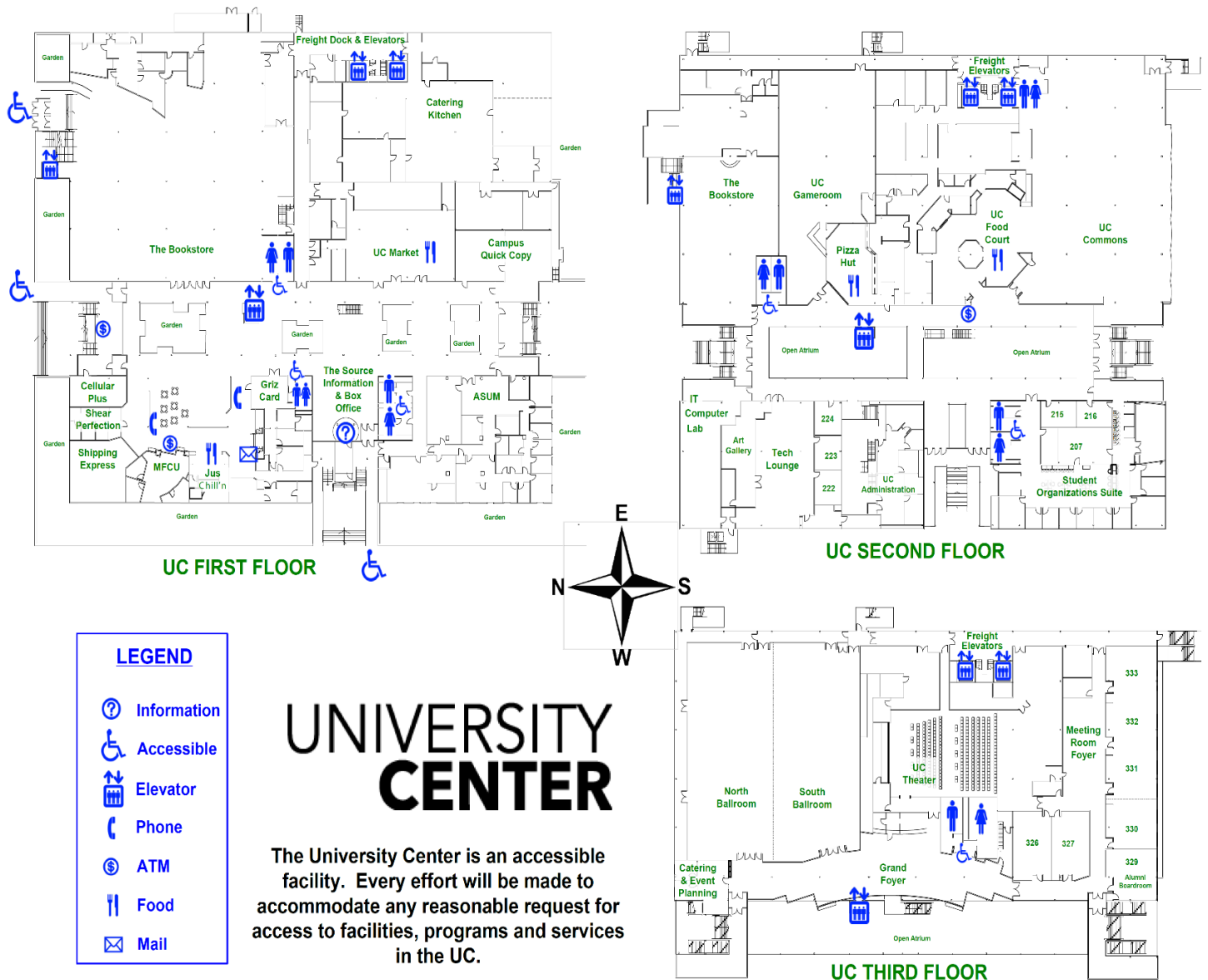
Dan Mahony

MISSOULA WALKING MAP

Madison Street Pedestrian Bridge **Closed** - Alternate Walking Route



UM UNIVERSITY CENTER MAP



THANK YOU UNIVERSITY OF MONTANA STUDENT SUB-UNIT FOR CO-HOSTING THIS EVENT!



SCHEDULE AT A GLANCE

DATE/TIME	EVENT	LOCATION	Room(s)
Sunday, May 21st			
10:00 am – 5:00 pm	WDAFS Executive Committee Meeting	Holiday Inn	Parlor C
	MT Executive Committee Meeting	Off site	Off site
Monday, May 22nd			
By Appointment	Media Room	University Center	329
8:00 am – 5:00 pm	Registration Open	University Center	Grand Foyer/Concession
8:00 am	Continental Breakfast	University Center	Grand Foyer
9:00 am – 5:00 pm	Trade Show and Poster Set-Up	University Center	UC Commons
9:00 am – 5:00 pm	Designing Beautiful Figures in R	University Center	330
10:00 am – 2:00 pm	Publish or Perish	University Center	332
9:00 am – 5:00 pm	Field Trips	Off site	Off site
3:00 pm – 6:00 pm	A/V equipment check & Talk Loading area	University Center	Grand Foyer
3:20 pm – 3:40 pm	Afternoon break with refreshments	University Center	UC Commons
5:00 pm – 6:00 pm	Volunteer Meeting (moderators, judges, and all other volunteers)	University Center	332
6:00 pm – 10:00 pm	Welcome Social	University Center	Ballroom N&S
Tuesday, May 23rd			
By Appointment	Media Room	University Center	329
7:00 am – 5:00 pm	Registration Open	University Center	Grand Foyer
7:00 am – 5:00 pm	A/V equipment check & Talk Loading area	University Center	Grand Foyer
8:00 am	Continental Breakfast	Dennison	Dennison
8:00 am – 12:00 pm	Poster set up	University Center	UC Commons
9:00 am – 10:00 pm	Trade Show Open	University Center	UC Commons
9:00 am – 12:00 pm	Plenary Session	Dennison	Dennison
10:35 am – 10:50 am	Morning break	Dennison	Dennison
12:00 pm – 1:20 pm	Lunch on your own		
1:20 pm – 5:40 pm	Oral presentations	University Center	6 rooms (330, 331, 332, 333, 326/327, Theater)
3:00 pm – 3:20 pm	Afternoon break with refreshments	University Center	UC Commons
5:00 pm – 6:00 pm	What Matters to You? Meet and engage with AFS Leaders	University Center	332
5:45 pm – 6:15 pm	MTAFS SSCC and RMCC meetings	University Center	Theater
6:00 pm - 10:00 pm	Trade Show and Poster Social	University Center	UC Commons
7:30 pm - 10:00 pm	Student Mentoring and Social Event (registration required)	University Center	Ballroom N&S

SCHEDULE AT A GLANCE

DATE/TIME	EVENT	LOCATION	Room(s)
Wednesday, May 24th			
7:00 am	Spawning Run	Off site	Off site
7:00 am – 5:00 pm	Registration Open	University Center	Grand Foyer
7:00 am	Continental Breakfast	University Center	UC Commons
7:00 am - 5:00 pm	A/V equipment check & Talk Loading area	University Center	Grand Foyer
7:00 am - 5:30 pm	Trade Show Open and Posters on Display	University Center	UC Commons
8:00 am – 12:00 pm	Oral presentations	University Center	6 rooms (330, 331, 332, 333, 326/327, Theater)
10:00 am – 10:20 am	Morning break	University Center	UC Commons
12:00 pm – 1:20 pm	WDAFS Business Lunch (WDAFS members only, registration required)	University Center	Ballroom N&S
1:20 pm – 5:20 pm	Oral presentations	University Center	5 rooms (331, 332, 333, 326/327, Theater)
3:00 pm – 3:20 pm	Afternoon break with refreshments	University Center	UC Commons
5:30 pm – 6:30 pm	Western Native Fish Committee Meeting	University Center	333
6:00 pm – 10:00 pm	50th Anniversary of MT Chapter Celebration Social	Caras Park	Caras Park
Thursday, May 25th			
7:00 am	Continental Breakfast	University Center	UC Commons
8:00 am – 12:00 pm	Registration	University Center	Grand Foyer
7:00 am - 11:00 pm	Trade Show Open and Posters on Display	University Center	UC Commons
8:00 am – 12:00 pm	Oral presentations	University Center	5 rooms (330, 331, 332/333, 326/327, Theater)
10:00 am – 10:20 am	Morning break	University Center	UC Commons
11:00 am – 4:00 pm	Trade Show and Poster Display take down	University Center	UC Commons
12:00 pm – 1:20 pm	MTAFS Business Lunch (MTAFS members only, registration required)	University Center	Ballroom N&S
1:20 pm – 4:40 pm	Oral presentations	University Center	5 rooms (330, 331, 332/333, 326/327, Theater)
3:00 pm – 3:20 pm	Afternoon break	University Center	Grand Foyer
6:00 pm – 11:00 pm	Banquet, awards, auction & raffle	University Center	Ballroom N&S
Friday, May 26th			
9:00 am – 5:00 pm	Field trips	Off site	Off site

*All events are open to all (unless otherwise noted in parenthesis).

TUESDAY, MAY 23

PLENARY SESSION

Dennison Theater

9:00 AM – 12:00 PM

9:00 – 9:30 AM: **Welcome by Missoula Mayor John Engen, Leslie Nyce (MTAFS), and Cleve Steward (WDAFS)**

9:30 - 10:00 AM

LYNN SCARLETT

Former Deputy Secretary and Chief Operating Officer of the U.S. Department of the Interior, Lynn Scarlett is worldwide Managing Director for Public Policy at The Nature Conservancy and Global Climate Strategy Lead. In these roles, Scarlett directs all policy in the United States and the 70 countries in which TNC operates. Scarlett also served at Interior as the Acting Secretary of the Interior in 2006. While Interior's Deputy Secretary, Scarlett initiated and chaired the Department's Cooperative Conservation Working Group and its first-ever Climate Change Task Force. She chaired the nation's Wildland Fire Leadership Council. She served on the Executive Committee of the President's Management Council. She is author or co-author of publications on climate change adaptation; ecosystem services; large landscape conservation; and science and decision making. She chairs the Science Advisory Board of NOAA, co-chairs the Landscape Conservation Cooperatives Council established in 2014 by the U.S. Department of the Interior, and co-chairs the National Academy of Sciences Sustainability Roundtable. She received her Bachelor's and Master's degrees in political science from the University of California, Santa Barbara, where she also completed her Ph.D. coursework and exams in political science and political economy.



10:05 – 10:35 AM

FRED W. ALLENDORF

Dr. Fred Allendorf is a Regents Professor Emeritus at the University of Montana. He has worked in collaboration with Montana Fish, Wildlife and Parks on the effects of hybridization with rainbow trout on conservation of native cutthroat trout since 1976. His overarching research philosophy has been that the most exciting basic research questions in genetics are also those that have valuable practical applications in conservation and fisheries.

He received his Ph.D. in Fisheries and Genetics from the University of Washington in 1975, and he was a postdoctoral scholar at the University of Aarhus in Denmark and Nottingham University in England. He has been a Fulbright Scholar at Victoria University of Wellington in New Zealand and at the University of Western Australia. He was elected a Fellow of the American Association for the Advancement of Science (AAAS) 1987, and he was elected President of the American Genetic Association in 1997. He received the American Fisheries Society's Award of Excellence in 2011, and received the Molecular Ecology Prize from the journal Molecular Ecology in 2015. The second edition of his co-authored book Conservation and the Genetics of Populations was published in 2013.



10:55 – 11:25 AM

JOE MARGRAF

Joe Margraf is the current President of the American Fisheries Society. He retired at the end of August 2016 as supervisor of U.S. Geological Survey Cooperative Fish and Wildlife Research Units in the western US. He served in the Coop Unit program since 1980 at Ohio, West Virginia, Maryland, and Alaska, where he was major advisor for over 50 graduate students and on the graduate committees of over 75 others. He has authored or co-authored over 100 publications and technical reports and over 100 presentations for scientific meetings. Joe has been an AFS member since 1972 and life member since 1984.

He received his BS degree in Fisheries from Cornell University, and MS and Ph.D. degrees from Texas A&M University. Joe is Past President of the Education Section, the Fish Habitat Section, and the Western Division. He also served six years as the AFS Constitutional Consultant. He has received both the AFS Distinguished Service and Meritorious Service awards, and was in the inaugural group of AFS Fellows. He and his wife presently live in Pagosa Springs, CO.



11:30 AM – 12:00 PM

BETHANN GARRAMON MERKLE

Bethann Garramon Merkle is an artist, writer, and science communicator specializing in visual storytelling. She is passionate about a) integrating drawing into education, research, and communication efforts, and b) the role stories play in shaping public perspectives of science and ecology topics. She has taught all ages and collaborates with entities like the Ecological Society of America, Harvard Forest, and the Wyoming chapter of The Wildlife Society to deliver art-science integration courses to the public as well as science educators, researchers, and biologists-in-training. Her current research topics are efficacy of drawing as a science learning and teaching tool and creativity in science.

On staff with the Wyoming Migration Initiative, she helps researchers with broader impacts initiatives, provides communication skills training, and create images that convey research results. Her work has been published in or commissioned by outlets and organizations such as American Scientist, the Biodiversity Institute, Ecology and Society, Fair Chase, Mother Earth News, Montana Outdoors, Parks Canada, The Nature Conservancy, The Wildlife Professional, University of New Mexico Press, and Western Confluence. Visit www.ecologicallytruestory.org for more information about her current personal projects: an exploration of ecosystems where tortoises and hares coexist and a survey of ecological concepts in children's books.



TITLE: Advances in Applications of Fish Hard Part Microchemistry: Concepts and Techniques**ORGANIZERS:** Samuel Bourret, Montana Fish, Wildlife and Parks; Timothy Linley, Pacific Northwest National Laboratory**LOCATION:** Room 330**TIME:** 1:20-5:00 PM

DESCRIPTION: Our understanding of the environmental life history of marine, diadromous, and freshwater fish has advanced substantially since the inception of hard part microchemistry techniques in the 1980s. These advances are attributable to the integration of elemental and isotopic markers to construct discriminating signatures in the environment, improvements in the accuracy and precision of instruments to quantify these markers, and the development of a statistical framework to analyze the resulting data. This progress has enabled application of hard part microchemistry to a broad range of fishery science and management issues such as stock identification, recruitment, and conservation. Coupled with their chronological properties, chemical analysis of calcified structures has also proved to be a powerful technique to resolve movement and habitat use over a wide range of spatial and temporal scales. Speakers in this symposium will highlight recent advances in microchemistry techniques and provide examples of how this tool is being used to address some of the most important issues facing fisheries management and conservation today. As habitat degradation, illegal fish introductions, land conversion, and climate change continue to alter aquatic environments, there is a growing need for progressive management to address these challenges. Hard part microchemistry provides a valuable tool to elucidate life-history responses and can complement traditional tagging and genetic techniques to assess the resiliency of fish populations to ecological change.

TITLE: Overcoming the Communication Breakdown Between Scientists and Stakeholders**ORGANIZERS:** John Harrison, Northwest Power and Conservation Council; Jennifer Anders, Northwest Power and Conservation Council; Nancy Leonard, Northwest Power and Conservation Council**LOCATION:** Room 331**TIME:** 1:20-4:40 PM

DESCRIPTION: In a 2015 online survey of U.S. members of the American Association for the Advancement of Science (there were 3,748 responses) 84 percent said the public's knowledge about science "specifically the lack thereof" is a major problem for the scientific field. Why? Three quarters of all respondents said too little science education is the major factor. The purpose of this symposium is not to argue for more STEM education, but to: 1) highlight some of the obstacles leading to communication breakdown between scientists and stakeholders, and 2) suggest ways to improve your communication with the public (e.g., landowners whose property you might work on, industry representatives who might support your work or be threatened by it, and policy-makers whose votes could determine funding for your agency and perhaps even your work). Today, scientists need to be able to communicate across a broad spectrum of platform from Twitter and Facebook (according to Pew Research, 62 percent of American adults get their news from social media) to speeches and written reports to emails to in-person conversations. This symposium brings together communication professionals from the worlds of science, policy, and the news media to help you improve your science communication.

TUESDAY, MAY 23

SYMPOSIA

UNIVERSITY CENTER

1:20 – 5:40 PM

TITLE: Reconnecting Non-Anadromous Fish Populations

ORGANIZERS: Joe Maroney, Kalispel Tribe of Indians; Shana Bernall, Avista

LOCATION: Room 332

TIME: 1:20 – 4:00 PM

DESCRIPTION: The need for fish passage facilities (both upstream and downstream) has been widely accepted for anadromous fish. Historically, there has been considerable controversy between resource agencies and hydropower operators about the need for fish passage for riverine or non-anadromous fish due to restricted movements. However, the paradigm is beginning to change in respect to providing passage for these fish. In recent years, with the innovation of small radio transmitters capable of tracking the movement of fishes, biologist's understanding of the migratory habits of fish has been enhanced. There is a growing body of evidence that some non-anadromous fish make significant migrations that could be impeded by hydropower facilities, dams and diversions. The construction of hydropower dams on major river tributaries has isolated upper basin populations, and eliminated the downstream fluvial or adfluvial life history forms dependent on upstream spawning habitat. Blocking those migrations has had a deleterious effect on these fishes, particularly Bull Trout, Westslope Cutthroat Trout and sturgeon. Connectivity impairment and fragmentation caused by dams and diversions are a Primary Threat in many core areas throughout the ESA listed range of Bull Trout.

Within the last decade, FERC relicensing and settlement agreements throughout the United States have required that upstream and/or downstream fish passage be provided at many of these hydroelectric facilities for non-anadromous fish populations. The need for passage for these fish is likely species- and site-specific. This session will focus on several examples of providing upstream and downstream passage at several facilities for non-anadromous fish. Innovative technologies for moving fish around these projects and ways to monitor success will be discussed. Presentations will discuss how information and knowledge about fisheries, hydrology, hydraulics, hydropower operations and fish behavior inform how fish passage can be achieved.

TITLE: Review of Fish Passage/Barrier Projects: Research, Application, and Lessons Learned

ORGANIZERS: Dan March, HDR; Erin Ryan, U.S. Fish and Wildlife Service; Mike Garelo, HDR; Dan Harmon, HDR

LOCATION: Room 333

TIME: 1:20 – 5:40 PM

DESCRIPTION: A mixture of short presentations with a focus on fish passage/barrier projects that discuss recent research endeavors, case studies, and lessons learned from practice. A review of laboratory based studies (i.e., swimming capability, technical fishway passage, etc.) from the past few years will transition to a discussion on field assessments and AOP work. The session will be rounded out with several talks on how fish passage/barrier projects transition from concept to design to implementation, design/construction considerations for remote sites and issues associated with removal of natural fish barriers.

TUESDAY, MAY 23

SYMPOSIA

UNIVERSITY CENTER

1:20 – 5:40 PM

TITLE: Environmental DNA 2.0: What is eDNA Doing for Fisheries Today?

ORGANIZERS: Taylor Wilcox, National Genomics Center for Wildlife and Fish Conservation; Michael Schwartz, National Genomics Center for Wildlife and Fish Conservation

LOCATION: Room 336/337

TIME: 1:20 – 5:40 PM

DESCRIPTION: Environmental DNA (eDNA) sampling uses genetic material in water samples to infer species presence. This method has been touted as a powerful new tool for fisheries promising sensitive species detection, non-invasive abundance estimates, and low-cost whole community data. These are lofty expectations for a new technology. In this symposium we explore how eDNA sampling is actually being used to understand the ecology of aquatic systems and inform the management of fisheries today. The field of eDNA sampling has matured to move beyond methods development and is now a part of the toolbox available to researchers and managers across the globe. In this symposium we draw from recent examples that highlight the many ways that eDNA sampling is currently being applied to answer pressing questions in fisheries science and management.

TITLE: Reservoir and Lake Fish Dynamics Under a Climate of Change and Multi-Year Drought

ORGANIZERS: Phaedra Budy, U.S. Geological Survey, Utah Cooperative Fish and Wildlife Research Unit, Utah State University; Jereme Gaeta, Utah State University

LOCATION: Theater

TIME: 1:20 – 5:40 PM

DESCRIPTION: In the Intermountain West, the changing climate and extended drought have resulted changes in both the magnitude and variability of lake and reservoir elevation. Many reservoirs are currently at half pool, and some are being fluctuated dramatically over short time periods to meet water development demands. This change in hydrologic regime and volume likely has important implications for both fish assemblages as well as for managing popular and economically-valuable fisheries. However, the effects of these changes are currently underappreciated, understudied, and rarely considered collectively (i.e., across trophic level, across system). In this symposium, we will start with several talks on the changing climate, the altered hydrologic regime and volume, and associated physical changes to reservoirs including limnological (temperature, oxygen), and structural changes (littoral habitat). We will then move up the food web from observed or predicted effects of these altered ecosystems to primary and secondary production. The remainder of the symposium will be about the effects of these altered ecosystems on fishes at individual, population, and community levels. This section will include bioenergetic and trophic effects as well as recruitment bottlenecks and habitat limitations. Finally, we will close with a section on anticipated or observed effects on ecosystem services, fisheries, and management implications. The symposium will be initiated with a talk introducing what we believe are the key issues and concluded with a panel discussion of where to go next (research and management needs).

SPECIAL SESSION

LOCATION: ROOM 332

TIME: 5:00 – 6:00 PM

WHAT MATTERS TO YOU? MEET AND ENGAGE WITH AFS PRESIDENT JOE MARGRAF, AFS EXECUTIVE DIRECTOR DOUG AUSTEN, AND WESTERN DIVISION AFS OFFICERS

AFS members are invited to a “town hall” type meeting live and via Skype with National and Western Division AFS officers. Participants will be encouraged to ask questions, raise issues, and engage in informal discussions about the future of AFS. This is your chance to speak up and get your professional society to focus on matters that are important to you.

UNIVERSITY OF MONTANA DINING



To us, sustainability means that our business choices are community-based, ecologically sound, socially just, economically viable, and that they will continue to be so for future generations. Central to our goal of sustainability is purchasing locally and sustainably produced goods, conserving water and energy, reducing and diverting waste, educating our community, and collaborating with campus and community partners. We are very proud of our environmental friendliness and sustainability.

We are at 75% Green in our purchasing of cleaning chemicals and paper supplies. Also to note – we use a microfiber mop system to clean floors, tables and windows cutting down on paper products and cleaning floors using less water and chemicals. We also use a concentrate foaming hand soap that not only is Green, but since it is a foam – a person uses less soap per use. The bottles in the dispensers are refillable so there is less plastic being tossed after a bottle is emptied. We use all recyclable or compostable paper goods depending on the hot or cold beverages, NO Styrofoam. Our cups for cold beverages are #1 recyclable and our hot cups are Earthchoice compostable

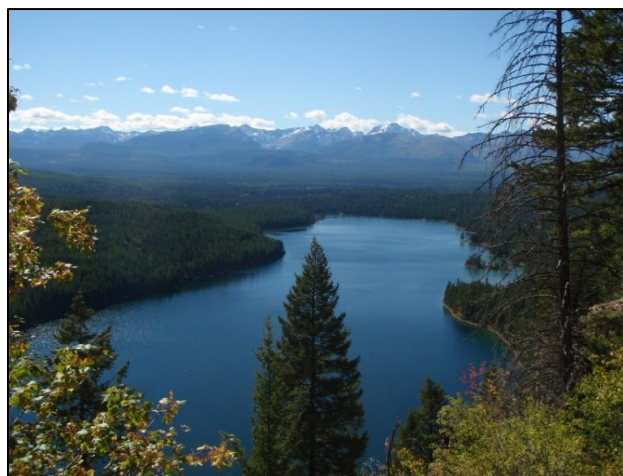
The Farm to College program is a local procurement program designed to bring more responsibly raised and grown Montana products to campus. The Farm to College program not only means better food for our guests, it also means a better future for agriculture here in Montana.

All of our Salmon is sustainably caught Alaskan Salmon sourced for us by a local company.

All of the beef served at your event will be Montana Beef, all of the shrimp Is Wild Caught USA Shrimp.

We use Cravens Coffee. Harvest For The World and Mexican Water Process Decaf are the blends served at your event. Both are certified organic and fair trade.

Any food that is still usable goes to the Poverello Center and Food Bank, the remaining unusable food gets composted. If you want to know more about UM Catering and UM Dining emphases on suitability on a daily basis you can look at our sustainability page - <http://www.umt.edu/dining/Sustainability/default.php>



Holland Lake, MT. Photo by Leo Rosenthal

TUESDAY, MAY 23

TRADE SHOW AND POSTER SOCIAL

UNIVERSITY CENTER COMMONS

6:00 – 10:00 PM

No. Poster Title

Author

Student Posters

1-1	Analysis of Spiny Softshell Turtle Distribution and Abundance in Four Rivers Systems in Eastern Montana	Gabriel Aponte
1-2	Reproductive Strategies of White Sands Pupfish Inhabiting Stable and Variable Habitats	Adam Baca
1-3	PIT Tag Retention in a Native Catfish	Timothy D'Amico
1-4	Columbia River Northern Pike - Investigating the Movement and Life History of an Invasive Freshwater Predator in British Columbia, Canada	Dan Doutaz
2-1	Using Otoliths to Describe Brown Trout Growth Patterns in the Upper Clark Fork River	Martin Etchemendy
2-2	Reconstructing Temperature-Mediated Growth in Juvenile Chinook Using Otolith Oxygen Isotopes	Katherine Gillies-Rector
2-3	Alternatives to Mechanically Deflating Swim Bladders: Potential Physiological Method in Recreational and Commercial Fisheries	Joshua Goff
2-4	Instream Structures Increase Pool Habitat for Cutthroat Trout in Simplified Headwater Streams	Tyson Hallbert
3-1	Life History Diversity in Post-Spawn Female Steelhead Trout Assessed Using Plasma Estradiol-17B: Relationship with Growth and Energy Reserves	Laura Jenkins
3-2	Population Characteristics and the Influence of Discharge on Bluehead Suckers and Flannelmouth Suckers	Zachary Klein
3-3	Using USGS StreamStats to Evaluate Relationships Between Fish Populations and Flow Regime	Larissa Lee
3-4	An Alternative Approach to Designing Fish Passage Structures: Design, Construction, and Operation of a Full-scale Indoor Research Fishway	Tyler Swarr
4-1	Using Juvenile Fish Composition to Examine Adult Walleye Use of the Missouri River Upstream of Canyon Ferry Reservoir	Tanner Traxler
4-2	Physiological Responses of Fishes to Stressors Associated with Oil and Natural Gas Development	Richard Walker

TUESDAY, MAY 23

TRADE SHOW AND POSTER SOCIAL		UNIVERSITY CENTER COMMONS	6:00 – 10:00 PM
<u>No.</u>	<u>Poster Title</u>		<u>Author</u>
<i>Professional Posters</i>			
4-3	Improving Reservoir Fish Habitat: A Story on Building Relationships and Saving Money		Amberle Jones
4-4	Deer Creek Floodplain Enhancement Project: A modern Approach to Process-Based Ecosystem Restoration		Kate Meyer
5-1	French and Moose Creek Restoration Project Case Study		Matt Barnes
5-2	Jeep in a Creek: Evaluating Riparian OHV Roads, Effects to Aquatic Fauna, and Restoration Efficacy in a Central Rocky Mountain Headwater Stream		Matthew Fairchild
5-3	The Merced River S.A.F.E Plan - Riverine and Riparian Restoration		Jarvis Caldwell
5-4	Kootenai River Habitat Restoration Program		Susan Ireland
6-1	Environmental DNA (eDNA) Sampling for Aquatic Species		Thomas Franklin
6-2	Upper Snake River Climate Change Vulnerability Assessment		Scott Hauser
6-3	Big Biology Meets Microclimatology: Defining Thermal Niches of Trout and other Species for Conservation Planning using Large Interagency Databases		Dan Isaak
6-4	The Crowd-sourced NorWeST Temperature Database and Massive Microclimate Scenarios for Streams and Rivers of the American West		Dan Isaak
7-1	Suppression of Nonnative Salmonids to Benefit Migratory Bull Trout in an Open System: An Update of the Effort on the East Fork Bull River, Montana		Sean Moran
7-2	Investigation of the Suitability of Insect Meals as Protein Sources for Rainbow Trout		Cheyenne Owens
7-3	A Map and Database of Westslope Cutthroat Trout Hybridization Zones Throughout Idaho and Montana Streams		Mike Young
7-4	Trophic Plasticity of a Renowned Piscivore: Dietary Patterns of Northern Pike in its Native and Invasive Ranges of Alaska		Nate Cathcart
8-1	Using Standard Benthic Macroinvertebrate Sampling to Derive Food Web Metrics in Salmon-bearing Streams		Sean Sullivan

WEDNESDAY, MAY 24

SPAWNING RUN

7:00 AM at University of Montana River Bowl – Visit runwildmissoula.org/runwild/ for more information.

SYMPOSIA

UNIVERSITY CENTER

8:00 AM – 5:20 PM

TITLE: Transformation of the Upper Clark Fork River Basin: A Story of Success; Challenges, and the Collaboration that is Making It Happen!

ORGANIZERS: Doug Martin, Montana Department of Justice Natural Resource Damage Program; Vicki Watson, University of Montana Watershed Clinic; Pat Saffel, Montana Fish, Wildlife & Parks

LOCATION: 330

TIME: 8:40 AM – 12:00 PM

DESCRIPTION: Mining activity from the 1880s through 1970s reduced the trout population of the Upper Clark Fork River Basin to about 1/5 of its potential. At times, the river ran red with mining waste, affecting aquatic life from Butte to Missoula, where the Blackfoot and Bitterroot Rivers joined the CFR, and dilution provided a partial solution. Superfund remediation efforts began in the 1980s, and in 1990 the State of Montana started efforts that went far beyond remediation, aimed at restoring the basin's fisheries. Montana departments of Fish, Wildlife and Parks, Environmental Quality and the Natural Resource Damage Program teamed up with local governments and local citizen groups, such as Trout Unlimited, Clark Fork Coalition, and Watershed Restoration Coalition to implement projects, large and small, that are transforming the river basin, returning native fish to reaches where they have been absent or severely depressed for a century.

TITLE: The Human Element of Aquatic Restoration: Working with Stakeholders to Plan and Implement Restoration

ORGANIZERS: Tracy Wendt, Big Thompson Watershed Coalition; Eric Berntsen, Kalispel Tribe Natural Resources Department

LOCATION: 332

TIME: 8:00 AM – 12:00 PM

DESCRIPTION: The best restoration design alone will not lead to project success without active stakeholder participation and buy-in from the beginning. Humans are, and always have always been, a key part of aquatic ecosystems and our actions and input are critical in developing successful restoration strategies. As a restoration project evolves from idea to fruition, it traverses through the hands of project sponsors, funding entities, design teams, regulatory agencies, and construction firms, each of which must have a firm grasp of the project's intended outcome. This symposium will feature examples of how the human element was considered in aquatic restoration projects across the West, including tools and techniques for relationship-building, leveraging of collaborative partnerships, and strategies for working together. Many projects around Missoula, Montana including those featured in field trips at this meeting, are prime examples of collaboration in river restoration and will be showcased in this symposium.

WEDNESDAY, MAY 24

SYMPOSIA

UNIVERSITY CENTER

8:00 AM – 5:20 PM

TITLE: Invasive Species and Fishery Management - An Examination of Current Issues

ORGANIZERS: Bob Wiltshire, Invasive Species Action Network; Leah Elwell, Western Regional Panel on Aquatic Nuisance Species

LOCATION: 333

TIME: 8:00 AM – 4:40 PM

DESCRIPTION: In recent years aquatic invasive species have become a major concern for the fishery profession. This symposium will cover many aspects of aquatic invasive species issues as they relate to fishery managers. There will be three primary focus areas of the symposium.

Invasive Sport Fish: the impacts of invasive fish species on native populations is of major concern to most fishery professionals. While some of these invasives have no sport value, very often the problems are created by non-native sportfish. In this session we will provide an overview of selected invasive sport fishes followed by a facilitated discussion of how to approach management of sport fish that have become invasive.

Aquatic Invasive Species of Concern: this session will provide information about a number of aquatic invasive species which are of significant concern to fishery professionals. Rather than provide typical presentations which are focused on a project, this session will feature overview presentations that discuss the species, its impacts, the current distribution of the species and what types of management actions are being taken.

Current and Emerging Issues: This session will focus on issues that are particular relevance for fishery workers. It will combine presentations on emerging threats, new management techniques and technologies, timely issues and examinations of management options and strategies and how they are applied in various situations.

Participants in this symposium will gain a better understanding of the diversity of aquatic invasive species issues and how they can impact on fishery programs. All presenters are recognized topic experts and the symposium is being developed in cooperation with the Western Regional Panel on Aquatic Nuisance Species.

TITLE: Fifty Years of Fisheries Genetics: Allozymes to Genomes

ORGANIZERS: Fred Allendorf, University of Montana; Ryan Kovach, U.S. Geological Survey

LOCATION: 336/337

TIME: 8:00 AM – 5:20 PM

DESCRIPTION: No field of fisheries biology has advanced more rapidly over the last 50 years than genetics. Genetic data now inform everything from harvest of the most abundant fishes to conservation of the rarest. Members of the Western Division of the AFS were international pioneers in the application of genetics to fisheries beginning with work at the National Marine Fisheries Service in the 1950s aimed to identify the continent of origin of salmon caught in the Pacific Ocean. Population genetic data and theory now are integrated into nearly every facet of fisheries conservation and management in marine and freshwater environments. In light of the theme for the meeting, the purpose of this symposium is to describe the development of fisheries genetics over the last 50 years and how these advances resolve conservation or management problems. Furthermore, we will highlight how ongoing or potential advances will chart the course of fisheries genetics into the future. In particular, we will feature how genomics can address previously intractable questions that are directly relevant to management and conservation (e.g., the genomic basis of inbreeding and outbreeding depression, functional trait variation, etc.). Continuity and historical context are crucial elements of this symposium. Speakers will highlight where we have come from, where we are going, and what this means for management and conservation.

WEDNESDAY, MAY 24

SYMPOSIA

UNIVERSITY CENTER

8:00 AM – 5:20 PM

TITLE: The Yellowstone River: A Lot Can Change in 692 Miles

ORGANIZERS: Leanne Roulson, HydroSolutions Inc.

LOCATION: Theater

TIME: 8:00 – 10:40 AM

DESCRIPTION: The Yellowstone River has a reputation as the longest undammed river in the contiguous United States. It is also known for spectacular falls in Yellowstone National Park, blue-ribbon trout fishing, beautiful scenic floating, unpredictable spring runoff, and broad, winding channels. All of this variety creates management challenges and can lead us to view as disjunct sections. How are we working with the river and what have we learned from some of the recent events along the Yellowstone.

TITLE: Montana Chapter AFS - 50th Anniversary Symposium

ORGANIZERS: Joseph DosSantos; Retired; Amanda Bryson, Montana Fish, Wildlife and Parks

LOCATION: Theater

TIME: 1:20 – 5:20 PM

DESCRIPTION: The 2017 Montana Chapter meeting will mark the 50th anniversary of the Montana Chapter - American Fisheries Society, celebrating the exceptional science, stewardship and dedications to the Big Sky Country's aquatic resources. The last half-century has not only brought challenges in fish species, aquatic resource, and user group fishery management within the backdrop of an increasing human population, but also significant gains in biological understanding, as well as evolving technological, predictive and analytical capabilities. Chapter members have served and participated throughout the American Fisheries Society, helping our Chapter's efforts in aquatic resource science and management to be recognized on several occasions. We invite you to join us for an afternoon of informative, and sometimes entertaining retrospective view of the Montana Chapter.

AQUATIC FILMS

LOCATION: Theater

TIME: 10:40 AM – 12:00 PM

DESCRIPTION: Two films will be presented for your viewing enjoyment, The Memory of Fish (54 min) and The Lost Fish (24 min). The Memory of Fish is an award-winning documentary by reelblue, LLC describing the restoration of the Elwha River in northwestern Washington state. Advertised as "a portrait of one man, the wild salmon he loves, and his fight to free a river," this is a moving tribute to one of many river restoration efforts currently underway. The Lost Fish is a Freshwater Illustrated's feature film – a collaborative with the Columbia River Intertribal Commission and the U. S. Fish and Wildlife Service – that captures the plight of the Pacific Lamprey, and the passion and determination of those working to ensure their survival.

MT CHAPTER 50TH ANNIVERSARY CELEBRATION SOCIAL

WEDNESDAY

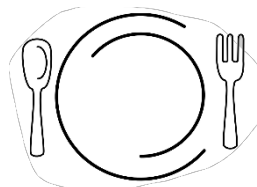
CARAS PARK

6:00 – 10:00 PM

Come join us in celebrating the 50th Anniversary of the Montana Chapter AFS along the banks of the Clark Fork River at Caras Park, a landmark Missoula outdoor venue. Dance to the Big Sky Mudflaps, a favorite Montana band, and eat delicious barbeque provided by the Notorious PIG, another of Missoula's favorites. Local microbrews will also be available to quench your thirst from all that dancing and socializing. Meet new and of course visit with old friends and colleagues, you just never know who will be there! You don't want to miss out!



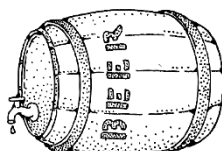
Enjoy music from the Big Sky Mudflaps!



Dine on delicious barbeque provided by the Notorious PIG!



Commemorative
50th Anniversary 16 oz.
silipints® will be
available for \$10 to
enjoy the local
microbrews!



<https://www.missouladowntown.com/caraspark/>

Enjoy fantastic views from Caras Park!



American Fisheries Society



THURSDAY, MAY 25

SYMPOSIA

UNIVERSITY CENTER

8:00 AM – 4:40 PM

TITLE: Native Non-Game Fishes: Ecological Insights and Management Approaches

ORGANIZERS: Luke Schultz, U.S. Geological Survey; Nate Cathcart, University of Alaska-Fairbanks; Phil Branigan, Idaho Cooperative Fishery Research Unit

LOCATION: 330

TIME: 8:00 – 11:00 AM

DESCRIPTION: For the past fifty years in western North America, aquatic ecosystems have been characterized by water development, introduced species, and increased urbanization, while at the same time experiencing changes in climate, policy, and perspectives on nongame species. Despite the challenges many native fishes and unique endemic populations remain, albeit several occupy only fractions of their historical ranges. Accordingly, animals that have experienced population declines from these stressors have received more protections through formal policies such as the Endangered Species Act and have benefited from a greater general awareness of the ecology of aquatic systems. This symposium will serve as an avenue to offer insights into native fish conservation through a variety of concepts, approaches, and techniques. In keeping with the theme of the WDAFS meeting, we would like to showcase changes or continuity of native fishes (or native fish assemblages) and their habitats, and the ecological insights and management approaches that are linked with these dynamics. This symposium will consider topics relating to all native fishes, but presentations on native game fish should be considered within the context of native communities.

TITLE: Shifting Distributions of Fish Assemblages in Western Rivers: Patterns, Drivers, and Implications

ORGANIZERS: Adam Sepulveda, U.S. Geological Survey, Northern Rocky Mountain Science Center; Al Zale, U.S. Geological Survey, Montana Cooperative Fishery Research Unit; Robert Al-Chokhachy, U.S. Geological Survey, Northern Rocky Mountain Science Center; David Schmetterling, Montana Fish, Wildlife and Parks

LOCATION: 331

TIME: 8:00 – 10:00 AM

DESCRIPTION: Longitudinal changes in stream fish assemblages follow a predictable environmental gradient. Coldwater fishes such as trout occupy the headwaters, warmwater fishes such as minnows dominate downstream reaches, and coolwater fishes such as pike occur in the transition zone. Climate-induced warming and changes in discharge are predicted to result in substantial longitudinal contractions of coldwater fishes and expansions of cool and warmwater fishes. In the West, much attention has already focused on the probable contractions of distributions of coldwater salmonids, but sparse information exists about other coldwater species and most cool and warmwater fishes, many of which are nonnatives that have the potential to expand upstream and consume salmonids. In this symposium, we will share research that underscores how these distributional shifts in fish assemblages can have desirable, negative, and unanticipated consequences on socioeconomically important sport fisheries, fish populations of conservation concern, and aquatic ecosystems.

THURSDAY, MAY 25

SYMPOSIA

UNIVERSITY CENTER

8:00 AM – 4:40 PM

TITLE: Forging Stronger Links Between Freshwater Food Web Ecology and Fisheries Management

ORGANIZERS: Erik Schoen, University of Alaska-Fairbanks; Mark Wipfli, Alaska Cooperative Fish and Wildlife Research Unit

LOCATION: 332/333

TIME: 8:00AM – 2:00 PM

DESCRIPTION: Aquatic food webs and fisheries are intrinsically linked: food web interactions support and constrain the productivity of fisheries, and fisheries management can have cascading effects on ecosystems. However, scientists and managers must bridge a gap between disciplines to fully capitalize on these links. Fisheries biologists working in lakes and streams have pioneered many of the central concepts in food web ecology, including trophic cascades, bioenergetics, spatial subsidies, and the non-consumptive effects of predators. However, scaling this rich body of research up to the large spatial and temporal scales relevant to fisheries managers has often proven challenging. Likewise, management actions such as changes in harvest, fish stocking, lake or stream fertilization, and invasive species management can provide valuable scientific insights, but in practice this requires careful monitoring and controls that can challenge the capacity of management agencies. This symposium highlights the connections between aquatic food-web research and management of river, lake, reservoir, and anadromous fisheries with the goal of forging stronger links between these fields. The session will showcase research with direct implications for fisheries management and conservation, as well as management- and conservation-oriented talks with direct scientific implications. Topics may include but are not limited to the responses of food webs and fisheries to perturbations such as climate change, invasive species, and habitat loss or restoration. Synthesis studies drawing on multiple ecosystems are particularly encouraged.

TITLE: Climate Vulnerability in Freshwater and Marine Ecosystems of Western North America: Sensitivity, Exposure, and Capacity for Adaptation

ORGANIZERS: Jeff Falke, U.S. Geological Survey, Alaska Cooperative Fish and Wildlife Research Unit; Jason Dunham, U.S. Geological Survey, Forest and Rangelands Ecosystem Science Center

LOCATION: 336/337

TIME: 8:00 – 11:00 AM

DESCRIPTION: Aquatic ecosystems of Western North America are rapidly changing owing to global climate change. However, much uncertainty surrounds our understanding of how changes to the physical environment will affect the biology and ecology of aquatic organisms to influence vulnerability at the population scale. Vulnerability assessment should be considered along three axes: sensitivity, exposure, and adaptive capacity. Recent research has moved beyond the effects of global change on species distributions to include behavioral thermoregulation, phenology, physiology, and landscape-scale assessments to the physical environment. The goal of this symposium is to bring together aquatic scientists from across a broad range of disciplines and representing a diverse array of ecosystems to share their recent research on aquatic species climate vulnerability in Western North America. These studies will cover the range from basic to applied biology, ecology, and management.

THURSDAY, MAY 25

SYMPOSIA

UNIVERSITY CENTER

8:00 AM – 4:40 PM

TITLE: Environmental Flow: Using Instream Flow and Water Policy to Benefit Western Fisheries

ORGANIZERS: Pat Saffel, Montana Fish, Wildlife & Parks; Andy Brummond, Montana Fish, Wildlife & Parks; Pat Byorth, Trout Unlimited; Tracy Wendt, Big Thompson Watershed Coalition

LOCATION: Theater

TIME: 8:00 AM – 4:20 PM

DESCRIPTION: Fish need water and so does everything else. Water is the foundation for a way of life in the west, as well as aquatic ecology and fisheries. Finding a balance between water use for agriculture, industry, communities and instream flow has been a challenge. Trends of decreasing water supply and increasing demand are further stressing water allocation policy and practice. The Western Division AFS meeting offers a unique opportunity to bring experts together to learn from each other about the basic need of fish: water. This symposium seeks to inform fishery professionals about 1) the basics of water law and policy, 2) tools used to conserve water and improve instream flow, and 3) the state of the science regarding the ecological responses to instream flow. To enhance learning, a key element of this symposium is comparing and contrasting socio-political, practitioner and scientific experiences.

BANQUET, AWARDS, AUCTION, AND RAFFLE

UC BALLROOM N&S

6:00 – 11:00 PM

GUEST SPEAKER: KURT FAUSCH

TIME: 7:00 – 7:20 PM

Kurt Fausch is a professor in the Department of Fish, Wildlife, and Conservation Biology at Colorado State University, where he has taught for 35 years. His research collaborations in stream ecology and fish conservation have taken him throughout Colorado and the West, and worldwide, including to Hokkaido in northern Japan. His experiences were chronicled in the PBS documentary *RiverWebs*, and the 2015 book *For the Love of Rivers: A Scientist's Journey*, which recently won the Sigurd Olson Nature Writing Award. He has received lifetime achievement awards from the American Fisheries Society (Award of Excellence) and the World Council of Fisheries Societies (International Fisheries Science Prize), and served as the acting director of the Graduate Degree Program in Ecology at Colorado State University.



PRESENTATION: *WHAT IS ESSENTIAL ABOUT RIVERS FOR FISH, AND HUMANS?*

Ongoing human effects on freshwater ecosystems, including a changing climate, demand that fisheries ecologists and managers plan for the utmost in resilience in watersheds in the West, and throughout the world. Recent research indicates that many stream fishes can move long distances to find the essential habitats they need to survive, grow, and reproduce, but only when habitats are connected. Beyond the needs of fish, however, what will cause humans to want to conserve rivers, and their watersheds? A four-decade journey as a scientist has convinced me that we humans need more from rivers than simply water to drink and grow crops, and fish to see and catch. Ensuring these essential values will require bringing them to the fore and fostering a new ethic for rivers.

FROM MT CHAPTER HISTORY

George Holton, one of the founding fathers of the Montana Chapter AFS was a kind and inspiring mentor to many of our members. He was amongst the first of over 400 Fish and Wildlife graduate students from Montana State University. His 1952 M.S. thesis entitled, "A Trout Population Study on a Small Creek in Gallatin County, Montana" contained excerpts from an Alfred Lord Tennyson poem, *The Brook*.

I come from haunts of coot and hern,
I make a sudden sally
And sparkle out among the fern,
To bicker down a valley.

By thirty hills I hurry down,
Or slip between the ridges,
By twenty thorpes, a little town,
And half a hundred bridges.

Till last by Philip's farm I flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

I chatter over stony ways,
In little sharps and trebles,
I bubble into eddying bays,
I babble on the pebbles.

With many a curve my banks I fret
By many a field and fallow,
And many a fairy foreland set
With willow-weed and mallow.

I chatter, chatter, as I flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

I wind about, and in and out,
With here a blossom sailing,
And here and there a lusty trout,
And here and there a grayling,

And here and there a foamy flake
Upon me, as I travel
With many a silvery waterbreak
Above the golden gravel,

And draw them all along, and flow
To join the brimming river
For men may come and men may go,
But I go on for ever.

I steal by lawns and grassy plots,
I slide by hazel covers;
I move the sweet forget-me-nots
That grow for happy lovers.

I slip, I slide, I gloom, I glance,
Among my skimming swallows;
I make the netted sunbeam dance
Against my sandy shallows.

I murmur under moon and stars
In brambly wilderness;
I linger by my shingly bars;
I loiter round my cresses;

And out again I curve and flow
To join the brimming river,
For men may come and men may go,
But I go on for ever.

TECHNICAL SESSIONS SCHEDULE

TUESDAY 5/23/2017, 1:20 – 3:00 PM

*STUDENT PRESENTATION

	Advances in Applications of Fish Hard Part Microchemistry: Concepts and Techniques	Overcoming the Communication Breakdown Between Scientists and Stakeholders	Reconnecting Non-Anadromous Fish Populations	Review of Fish Passage/Barrier Projects: Research, Application, and Lessons Learned	Environmental DNA 2.0: What is eDNA Doing for Fisheries Today?	Reservoir and Lake Fish Dynamics Under a Climate of Change and Multi-Year Drought
Room	330	331	332	333	336/337	Theater
Moderator	Sam Bourret	Nancy Leonard	Joe Maroney	Dan March	Taylor Wilcox	Phaedra Budy
1:20 PM	Quantifying Individual Based Migration Strategies to Understand Selection on Juvenile Life-History for a Salmon Population in an Altered Landscape	When Science Speaks: Improving Your Communication with the Press, the Public, and Policy Makers	Malad River Rainbow Trout Passage: Past Success Informing Future Design	A Baseline Swimming Assessment for Arctic Grayling: Characterizing the Volitional Swimming Performance of Arctic Grayling to Inform Passage Studies	Environmental DNA 2.0: What is eDNA Doing for Fisheries Today?	Resiliency and Vulnerability of Lentic Ecosystems and Communities to Multiyear Drought: What is Known and What Remains Uncertain
	Jens Hegg*	Nancy Leonard and John Harrison	Steve Brink	Erin Ryan	Taylor Wilcox	Jereme Gaeta
1:40 PM	Evaluation of Fin Rays and Scales as Nonlethal Alternatives to Otoliths for Assessing Natal Origins in Salmonids	The Communications Secret the Pros Don't Want You To Know About	An Automated Imaging System to Monitor Rainbow Trout Passage	Arctic Grayling and Denil Fishways: A Study to Determine How Water Depth Affects Passage Success of Arctic Grayling Through Denil Fishways	Spatio-temporal Distributions of Bull Trout and Rainbow Trout in the Bruneau-Jarbridge Rivers Wilderness	Drought Effects on Lake and Reservoir Levels in the American West
	Jaclyn McGuire*	Tom Dickson	Steve Brink	Matt Blank	David Pilliod	Sarah Null
2:00 PM	Quantifying the Shifting Habitat Mosaic of Pacific Salmon Using Otolith Microchemistry and Dendritic Isoscapes	Drawn to Science: Communicating Visually for Diverse Purposes and Audiences	Whooshh Fish Passage - Non-Anadromous Species Reconnectivity	Steep Grade Ahead – Developing Fishway Design Criteria for Small-bodied Great Plains Fishes	Phased Approach for Monitoring Recolonization by Anadromous Fish of a Large, Transboundary Watershed	Drought May Compound Effects of Climate Warming on High Elevation Lakes
	Sean Brennan		Todd Deligan	Tyler Swarr*	Matthew B. Laramie	Kyle Christianson*
2:20 PM	Natal Origins and Migration Behavior of Kokanee Salmon in Lake Roosevelt	Bethann Garramon Merkle	Transport-to-Adult Return Rates Among Adfluvial Bull Trout Transported as Juveniles Downstream of Hydroelectric Dams in the Lower Clark Fork River	Whitewater Parks: Implications for Fish Habitat and Fish Passage	Turning Genomic Data into eDNA Assays for Detection of a Cryptic Invasion Front	Multiyear Drought-Driven Changes in Zooplankton Community Structure with Implications for Fish Conservation in a Large Shallow Lake
	Tim Linley		Eric Oldenburg	Matt Kondratieff	Travis Seaborn	Kevin Landom
2:40 PM	Egg vs. Water: Maternal and Incubation Water Contributions to Otolith 87Sr/86Sr		Reconnecting Migratory Westslope Cutthroat Trout Populations in the Lower Clark Fork River Following Years of Blockage	Lolo National Forest: 15 Years of Aquatic Organism Passage	Detecting Spawning of Threatened Chum Salmon Over a Large Spatial Extent Using eDNA: Implications for Monitoring Recolonization	Mysis diluviana Responses to Severe Drought in Three Montane Reservoirs
	Jill Janak		Shana Bernall	Shane Hendrickson	Kris Homel	Brett Johnson

TECHNICAL SESSIONS, TUESDAY 5/23/2017, 3:20 – 5:40 PM

*STUDENT PRESENTATION

	Advances in Applications of Fish Hard Part Microchemistry: Concepts and Techniques	Overcoming the Communication Breakdown Between Scientists and Stakeholders	Reconnecting Non-Anadromous Fish Populations	Review of Fish Passage/Barrier Projects: Research, Application, and Lessons Learned	Environmental DNA 2.0: What is eDNA Doing for Fisheries Today?	Reservoir and Lake Fish Dynamics Under a Climate of Change and Multi-Year Drought
Room	330	331	332	333	336/337	Theater
Moderator	Sam Bourret	Nancy Leonard	Joe Maroney	Erin Ryan	Taylor Wilcox	Jereme Gaeta
3:20 PM	The Influence of Rainbow Trout Hybridization on Natal Site Fidelity Samuel L Bourret	What Reporters Look For Robert Chaney	Conservation of Bull Trout in the Lower Clark Fork River: Evaluating the Effects of Passage, Nonnative Trout Suppression, and Habitat Restoration Douglas Peterson	Swimming Performance of Sauger in Relation to Fish Passage Kevin Kappenman	Monitoring Pacific Lamprey Distribution and Re-introduction in the Wenatchee River: an eDNA Pilot Study Ann Grote	The Effect of Multiyear Drought on Habitat Availability and Tributary Connectivity with Implications for Bear Lake Sculpin & Bonneville Cutthroat Trout Hayley Glassic*
3:40 PM	Quantifying Hypoxia Exposure in Fishes Using Redox-Sensitive Chemical Markers in Otoliths Benjamin Walther	How to Talk about Science so that People Want to Listen and Get Involved Patrick Ortmeier	An Evaluation of Variables Influencing Cutthroat Trout Colonization and Abundance in Newly Accessible Habitats Above Previously Blocking Road Culverts Travis Schill	Design and Construction Considerations for Remote Fish Barriers Dan March	Using Environmental DNA to Evaluate Invasive Species Eradication Efforts Adam Sepulveda	The Effect of Lake Level on Forage and Lahonton Cutthroat Trout in Pyramid Lake, Nevada Gary Thiede
4:00 PM	The Use of Strontium Isotope Ratios 87Sr:86Sr in Otoliths and Fin Rays to Inform Ecology, Conservation, and Management of Fishes in California Jim Hobbs	Four Secrets to Help Non-scientists Understand (or at least appreciate) the Science Behind the Issue Jennifer Anders		Restoration of a Legacy Fish Passage Barrier in the Upper Salmon River Drainage, Idaho Chad Wiseman	No Fish Left Behind: Environmental DNA Sampling to Ensure Successful Fish Eradication Kellie Carim	Water Clarity, Drought and Length-Weight Relationships of the Endangered June Sucker and Sport Fishes in a Highly Eutrophic Utah Lake Ryan Dillingham
4:20 PM	Estimating Behavioral Diversity of Salmonids in the Upper North Platte River Using Otolith Microchemistry Lindsy Ciepiela*	Panel Discussion - Ask Your Questions and Get Answers from Reporters, Policy-Makers, and Outreach Specialists		Fish Passage at Remote Natural Barriers Shaun Bevan	At the Forefront: Evidence of the Applicability of Using Environmental DNA to Quantify the Abundance of Fish Populations in Natural Lentic Waters Stephen Klobucar*	Do Reservoirs Trophic Niche Spaces Become More Crowded Under a Warmer, Drier Climate? Phaedra Budy
4:40 PM	Stable Isotope Analyses on Otoliths of Pacific Salmon Yongwen Gao			Harmony Ditch Diversion, It's Not Always Harmony Erin Leonetti	The Promise and Pitfalls of Fish Enumeration Using eDNA: Spatiotemporal Dynamics of Salmon DNA in a Spawning Stream Michael Tillotson*	Finding a Way to Create Robust Fisheries in a Changing Environment Craig Walker
5:00 PM			What Matters to You? Meet and Engage with AFS President Joe Margraf, AFS Executive Director Doug Austen, and Western Division AFS Officers (5-6pm)	Regulatory Considerations for New Fish Passage Technologies Alison Colotelo	The Range-wide, eDNA-Based Inventory of Bull Trout: Early Results and an Ongoing Invitation Michael Young	Round Table Discussion - Organization of a "Fisheries" Perspective Article
5:20 PM				Perspectives on Restoring Connectivity and Anadromy Upstream of Impassable Dams in the Elwha and Skokomish Systems, Washington Kathryn Sutton	The Aquatic eDNA Atlas for the American West: All Species, All Streams Through Crowd-sourcing and One Interagency Database Dan Isaak	

TECHNICAL SESSIONS, WEDNESDAY, 5/24/2017, 8:00 – 10:00 AM
***STUDENT PRESENTATION**

	Transformation of the Upper Clark Fork River Basin: a Story of Success, Challenges, and the Collaboration that is Making It Happen!	Contributed Presentations: Inland Fisheries Ecology and Management	The Human Element of Aquatic Restoration: Working with Stakeholders to Plan and Implement Restoration	Invasive Species and Fishery Management - an Examination of Current Issues	Fifty Years of Fisheries Genetics: Allozymes to Genomes	The Yellowstone River: A Lot Can Change in 692 Miles
Room	330	331	332	333	336/337	Theater
Moderator	Vicki Watson	Mike Meeuwig	Tracy Wendt	Bruce Farling	Fred Allendorf	Leanne Roulson
8:00 AM		2017 State of the Salmonids: Fish in Hot Water	A Collaborative Approach to Restoration and Flood Recovery on the Big Thompson River	Invasive Species and Fisheries Management: an Examination of Current Issues	Fifty Years of Fisheries Genetics: Allozymes to Genomes	An Introduction to the Yellowstone River
8:20 AM		Patrick Samuel	Tracy Wendt	Leah Elwell	Fred Allendorf	Leanne Roulson
		Temporal Variability in the Distribution and Abundance of a Desert Trout Associated with Stream Drying	Collaborating to Develop a Watershed Action Plan	Western Lake Trout Woes - Revisited	Some Neat Stuff in Fishery Genetics I Have Stumbled Across Over the Years	Mountain Whitefish Kill and Proliferative Kidney Disease in the Yellowstone River, Montana
		Mike Meeuwig	David Ward	Wade Fredenberg		Scott Opitz
8:40 AM	Symposium Introduction	The Salmonid Population Viability Project: Modelling Trout Viability in a Desert Landscape	Culture Clash and Partnership? Challenges of Implementing Watershed Restoration for Threatened and Endangered Species in Culturally-Significant Areas	Evaluation of Suppression Methods Targeting Non-native Lake Trout Embryos in Yellowstone Lake		Aquatic Ecological Diversity Shifts Along the Yellowstone River Continuum from Trout to Sturgeon
	Vicki Watson	Helen Neville	Rob Lawler	Nathan Thomas*	Robin Waples	David Stagliano
9:00 AM	The Upper Clark Fork River: A History of Use, Abuse and Reuse	How Many Fish Live in that River Network? A Scalable Population Estimator that uses Spatial Stream Network Models and Nonrandom Fish Density Datasets	Implementing Process-Based Restoration in Harvey Creek, Washington, USA	The Northern Pike Minnow, You Should be Afraid...Be Very Afraid	Use of Local Westslope Cutthroat Trout Stocks for Genetic Conservation	Yellowstone River Channel Migration Easement Program
	Matt Vincent	Dan Isaak	Eric Berntsen	Joe Maroney	Matthew C. Boyer	Wendy Weaver
9:20 AM	Remediation/Restoration of the Upper Clark Fork River Basin: Uncertainty, Challenges, and Successes	Describing Interactions Between Bull Trout and Lake Trout in Priest Lake, Idaho	Stream Restoration on Medicine Lodge Creek, Wyoming	Invasive Northern Pike are Associated with Range Contractions of Three Native Cyprinids	Playing God with Guppies: Testing Whether Genetic Rescue Works Using a Model Experimental System	Yellowstone River: A Tale of Two Spills
		Derek Entz*	Laura Burckhardt	Allison Stringer*	W. Chris Funk	Alicia Stickney
9:40 AM		Are Brown Trout Negatively Impacting Yellowstone Cutthroat Trout?	O'Dell Springs Creek and Wetland Restoration: 13 Years of Successful Partnerships and Collaboration	Non-Native Trout as Invasive Species Affecting Native Fish Species	The Genomics of Adaptation: Lessons from Threespine Stickleback	Competing Interests on the Yellowstone: Pallid Sturgeon and the Intake Diversion Dam
	Douglas Martin	Robert Al-Chokhachy	John Muhlfeld	Bradley Shepard	Paul Hohenlohe	Aaron Hall

TECHNICAL SESSIONS, WEDNESDAY, 5/24/2017, 10:20 AM – 12:00 PM
***STUDENT PRESENTATION**

	Transformation of the Upper Clark Fork River Basin: a Story of Success, Challenges, and the Collaboration that is Making It Happen!	Contributed Presentations: Inland Fisheries Ecology and Management	The Human Element of Aquatic Restoration: Working with Stakeholders to Plan and Implement Restoration	Invasive Species and Fishery Management - an Examination of Current Issues	Fifty Years of Fisheries Genetics: Allozymes to Genomes	The Yellowstone River: A Lot Can Change in 692 Miles
Room	330	331	332	333	336/337	Theater
Moderator	Vicki Watson	Mike Meeuwig	Eric Bernsten	Bruce Farling and Bob Wiltshire	Fred Allendorf	Leanne Roulson
10:20 AM	Fisheries Response to Remediation and Restoration Actions in the Upper Clark Fork Basin Jason Lindstrom	Fish Movement Patterns in the Smith River Watershed in Central Montana. Michael Lance*	Create, Visualize, and Share 3D Models Using UAS Technology for River Restoration Ryan Richardson	Forecasting With a Mechanistic Model the Invasion and the Management of Brown Trout in the Logan River, Utah Christophe Laplanche	Selection Against Rainbow Trout Admixture Across Populations, Environments, and the Genome Ryan Kovach	The Shape of a River (12 min) Ocean Media Institute film <i>SYMPOSIUM CONCLUDED</i>
10:40 AM	Scale and Permanence: Fish Response to the Removal of Milltown Dam, MT David Schmetterling	Results from Acoustic Tracking of Redband Trout Tagged in Lake Roosevelt Tributaries Bryan Witte*	Reach-Scale Restoration on Nevada Creek: Balancing Habitat Improvements With Traditional Agriculture in the Blackfoot Valley Montana Ron Pierce	Illegal Fish Introductions in Montana Jim Vashro	Using Genomic Data for Conservation: Range-Wide Demographic and Genetic Structure of Longfin Smelt Mandi Finger	<i>AQUATIC FILMS</i> The Memory of Fish (54 min)
11:00 AM	Monitoring Fisheries Responses to Restoration in the Upper Clark Fork River Basin Nathan Cook	Rufus Woods Rainbow Trout Supplementation: A Six Year Overview of Creel Monitoring and Evaluation Jeff Caisman	Montana Stream Permitting Guide Bruce Anderson	Moderated Discussion on Invasive Fish Issues Bruce Farling	Patterns of Rainbow Trout/Westslope Cutthroat Trout Hybridization in Montana and Northern Idaho Kevin McKelvey	
11:20 AM	Floodplain Remediation and Restoration in the Upper Clark Fork River Basin, Montana Amy Sacry	Using Hypolimnetic Oxygenation to Enhance a Mesotrophic Lake Coldwater Fishery Benjamin Cross	Stream Restoration to Improve Human Overwintering and Rearing Habitat Warren Colyer	What's the Deal with Invasive Crayfish in the West? A Case Study of Rusty Crayfish Mathis Messenger*	Legacy Introductions and Climatic Variation Explain Spatiotemporal Patterns of Invasive Hybridization in a Native Trout Clint Muhlfeld	reelblue, LLC film
11:40 AM	Changes in Climate, Flows and Algae Levels in the Clark Fork River Vicki Watson	Examining the Drivers of Cold-Water Refuges in a Large Impounded River Francine Mejia	The Dolores River Restoration Partnership; Reflecting on Seven Years of Watershed Restoration and Collaboration Michael Jensen	Introduced American Bullfrog Spread in the Yellowstone River Adam Sepulveda	Duplicate Loci and Gene Mapping in Fisheries Genetics: Allozymes to Next-Generation Sequencing Garrett McKinney	The Lost Fish (24 min) Freshwaters Illustrated film

TECHNICAL SESSIONS, WEDNESDAY, 5/24/2017, 1:20 – 3:00 PM

*STUDENT PRESENTATION

Contributed Presentations: Emerging Technologies		Contributed Presentations: Habitat and Restoration		Invasive Species and Fishery Management - an Examination of Current Issues	Fifty Years of Fisheries Genetics: Allozymes to Genomes	Montana Chapter AFS – 50 th Anniversary Symposium
Room	331	332	333	336/337	Theater	
Moderator	Leo Rosenthal	Lora Tennant	Bob Wiltshire and Leah Elwell	Ryan Kovach	Craig Barfoot	
1:20 PM	Whooshh Fish Passage - Results from 2016 Studies Todd Deligan	Distinctions in Vegetation and Fish Assemblages Among Wetland Types According to Dominant Features in Large, Shallow Lakes Leo Bodensteiner	Flowering Rush Facilitation of Northern Pike Peter Rice	Saving the Spandrels? Adaptive Genomic Variation in Conservation and Fisheries Management Devon Pearse	Introductory Remarks, Session Overview, and Reflections on the Formation of the Chapter Leslie Nyce, Craig Barfoot, William Gould	
1:40 PM	Evaluation of an Electric Fish Barrier on an Irrigation Canal on the Lower Gunnison River, Colorado Dan Kowalski	Recovery of Fish Populations and Physical Channel Characteristics in Streams Impacted by Catastrophic Debris Flows Jason Walter	Everything You Wanted to Know About Rock Snot. A Brief History of <i>Didymosphenia geminata</i> Leah Elwell		Early Years of the Chapter Ron Marcoux	
2:00 PM	When Tiny Bubbles Cause Big Problems: A Systematic-Type Review of Gas Bubble Trauma in Freshwater Fishes Naomi Pleizier*	Fish Out of Water - Regulating and Restoring Floodplain Function Marjorie Wolfe	Phosphorus Enrichment as a Management Strategy for Didymo Nuisance Mats in the Kootenai River, Libby, MT Katie Vivian	Experimental Test of Genetic Rescue in Isolated Populations of Brook Trout Zachary Robinson*	Not Easy Being Native: The Fine Line Between Fish Icon and Cut Bait Wade Fredenberg	
2:20 PM	Sustainable Agro-based Earthen Pond Integrated Carp Fish Farming in Pakistan: Prospects of Transfer of American Fish Feed Technologies Muhammad Naeem Khan	Deer Creek Floodplain Enhancement Project: A Modern Approach to Process Based Ecosystem Restoration Kate Meyer	Montana's Response to Invasive Mussel Detections Patrick Saffel	Parentage Based Tagging of a Natural Coho Salmon Population to Assess Hatchery Influence Hayley Nuetzel*	MCAFS Advocacy Through the Years Chris Hunter	
2:40 PM	Development of a Fully-Integrated Field eDNA Sampling and Detection System Austen Thomas	Riparian Vegetation, Instream Habitat, and Aquatic Biota Differences within Riparian Grazing Exclosures Daniel Dauwalter	Dreissenid Prevention Across the Pacific Northwest Stephen Phillips	Two Million Genotyped Fish and Counting: What We've Learned About Genetic Stock Identification in Salmon Lisa Seeb	Advocacy on the Ground and in the Water Pat Clancey	

TECHNICAL SESSIONS, WEDNESDAY, 5/24/2017, 3:20 – 5:20 PM

*STUDENT PRESENTATION

Contributed Presentations: Emerging Technologies		Contributed Presentations: Habitat and Restoration		Invasive Species and Fishery Management - an Examination of Current Issues	Fifty Years of Fisheries Genetics: Allozymes to Genomes	Montana Chapter AFS – 50 th Anniversary Symposium
Room	331	332	333	336/337	Theater	
Moderator	Leo Rosenthal	Gary Thiede	Leah Elwell	Ryan Kovach	Craig Barfoot	
3:20 PM	A Video Based Electroshocking Platform to Identify Lamprey Ammocoete Habitats: Field Validation and New Discoveries in the Columbia River Basin Evan Arntzen	Montane Meadow Restoration in the Sierra Nevada: Understanding the Potential Impacts to Native Fish Communities Lora Tennant	Ecotechnology in the Age of Invasive Species Todd Deligan	Genome Wide Association and FST-Outlier Tests Reveal Candidate Adaptive Loci in a Unique Lacustrine Life History of a Threatened Trout Helen Neville	Aquatic Habitat Protection and Stream Access Montana Style, the Role of MCAFS Larry Peterman and Jerry Wells	
3:40 PM	Estimating Pallid Sturgeon Larval Drift in the Missouri River Downstream of Fort Peck Dam Using a 3D Hydro-Acoustic River Mapper, River Analyzer Brian Marotz	Ecological Restoration Along the Kootenai River: Linking Food Web, Wildlife Habitat, and Aquatic Habitat Thomas Parker	The Efficacy of Using Electrical Waveforms to Kill the Embryos of Invasive Common Carp at Malheur Lake Will Simpson	Genetic Monitoring of Reintroduced Spring Chinook Salmon Kathleen O'Malley	Diversity Within the Chapter Leanne Roulson	
4:00 PM	Wanted: Dead or Alive. Determining Fish Status from Mobile PIT Antenna Detection Data Ben Stout*	Kootenai River Pool Ladder: Reach-Scale Habitat Restoration for Native Fish and Wildlife Species Matt Daniels	Life History Flexibility May Facilitate Colonization of Diverse Habitats by Invasive Brook Stickleback Paul Spruell	Demography and Genetics of a Salmonid Metapopulation Andrew Whiteley	Professional Networking and Team Building: Fear and Loathing at Montana AFS Brad Shepard	
4:20 PM	Monitoring Natural-Origin Adult Chinook Salmon Escapement using Dual-frequency Identification Sonar in the Secesh River, Idaho Clark Watry	Fisheries Habitat Conservation... Montana Fish, Wildlife & Parks' Aquatic Habitat Protection, Mitigation and Restoration/Enhancement Programs and Legacy Bruce Rich	Evaluation of Potential Translocation Sites for Hornyhead Chub Brian Hickerson*	Domestication and Fitness Decline in Hatchery Steelhead: Why Does it Happen So Fast? Michael Blouin	Science: It Was Good While It Lasted David Schmetterling	
4:40 PM	Necessity-Driven Changes to Fisheries Monitoring in a Fragile Ecosystem: From Codends to Cameras David Ayers	Kootenai River Restoration Opportunities: A Riparian Habitat Suitability Analysis Selita Ammond		Isolation, Migration, and Local Recruitment Drive Persistence of Cutthroat Trout in Tributaries near American Falls Reservoir Daniel Bingham	General Reminiscence: Open Mic Session	
5:00 PM				Symposium Endnote: Why Has Genome Science Had Such a Profound Effect on the Conservation of Pacific Salmonids? Jim Seeb		

TECHNICAL SESSIONS, THURSDAY, 5/25/2017, 8:00 – 10:00 AM

*STUDENT PRESENTATION

	Native Non-Game Fishes: Ecological Insights and Management Approaches	Shifting Distributions of Fish Assemblages in Western Rivers: Patterns, Drivers, and Implications	Forging Stronger Links Between Freshwater Food Web Ecology and Fisheries Management	Climate Vulnerability in Freshwater and Marine Ecosystems of Western North America: Sensitivity, Exposure, and Capacity for Adaptation	Environmental Flow: Using Instream Flow and Water Policy to Benefit Western Fisheries
Room	330	331	332/333	336/337	Theater
Moderator	Nate Cathcart	Robert Al-Chokhachy	Mark Wipfli	Jeff Falke	Pat Saffel
8:00 AM	Riverscape Genomics of Speckled Dace Differ by Basin in Western North America Steven Mussmann*	Shifting Fish Distributions in the Yellowstone River with a Focus on Introduced Smallmouth Bass Adam Sepulveda	Can Short-Term Nutrient Additions Lead to Long-Term Recovery of Pacific Salmon? Joseph Benjamin	Climate Vulnerability and Salmonids in Alaska: Hind- and Forecasting Freshwater Growth and Phenology Across Species and Habitats Jeff Falke	Our Future in a Warming, Water- Stressed World Robert Glennon
8:20 AM	Taxonomic Revisions for Cutthroat Trout: What Can This Charismatic Sportfish Teach Us to Address Taxonomic Uncertainty in Other Fishes? Luke Schultz	Range Boundary Dynamics Reveal Drivers and Limits of Smallmouth Bass Distribution in Pacific Northwest Streams Erika Rubenson*	Using Food Webs to Guide Conservation Propagation of Pallid Sturgeon Addie Dutton*	A Remote Sensing and Occupancy Estimation Approach to Quantify Spawning Habitat Use by Fall Chum Salmon Along the Chandalar River, Alaska Chelsea Clawson*	
8:40 AM	Stonecat Ecology in St. Vrain Creek Timothy D'Amico*	In Defense of Resident Bull Trout Chris Clancy	Foraging Ecology and Production of Rio Grande Cutthroat Trout in the Face of Mounting Ecological Pressures Brock Huntsman	Migration Patterns of Adult Chinook Salmon in Two Southeast Alaska Transboundary Rivers Kristin Neuneker*	
9:00 AM	Distribution of and Habitat Use by the Salish Sucker, an Endemic Species West of the North Cascades James Helfield	Wyoming's Powder River Sturgeon Chub: Here, Gone, and Back Again Bill Bradshaw	Linking Spatial and Food Web Complexity: Perspectives from a River-Floodplain and Implications for Restoration and Salmonid Conservation James Paris*	Drought and Water Availability in Western Riverscapes Jason Dunham	Tom Annear and Laura Ziemer
9:20 AM	Olympic Mudminnow, Where Art Thou? Lauren Kuehne	Understanding Multiple Impacts of Hydrologic Alteration on Native Fish Communities in the Rio Grande, Texas and Mexico Brian Laub	Growth and Foraging Patterns of Juvenile Chinook and Coho Salmon in Three Geomorphically Distinct Sub-Basins of the Kenai River Benjamin Meyer*	Climate Warming Rates of Salmon and Trout Rivers in the West: Implications for Conservation and Management Dan Isaak	
9:40 AM	Examining Distribution and Habitat Preferences of Native Fishes in a Coastal Basin of Washington State Marie Winkowski	Otolith Microchemistry Reveals Inter-Annual Shifts in the Quality of Juvenile Sockeye Salmon Habitats in a Remote Alaskan Watershed Timothy Walsworth		Climatic Variation and Linkages to Patterns of Yellowstone Cutthroat Trout Growth, Condition, and Behavior Robert Al-Chokhachy	
					Squeezing Water from Stones: Developing an Instream Flow Program in Utah. Paul Burnett

Native Non-Game Fishes: Ecological Insights and Management Approaches		Forging Stronger Links Between Freshwater Food Web Ecology and Fisheries Management		Climate Vulnerability in Freshwater and Marine Ecosystems of Western North America: Sensitivity, Exposure, and Capacity for Adaptation		Environmental Flow: Using Instream Flow and Water Policy to Benefit Western Fisheries	
Room	330	332/333		336/337		Theater	
Moderator	Luke Schultz	Mark Wipfli		Jeff Falke		Pat Byorth	
10:20 AM	Do Spawning and Rearing Habitat Contribute to the Recruitment Bottleneck of Imperiled Bluehead Sucker?	Can Amphibians Help Conserve Native Fish?		Accounting for Adaptive Capacity and Uncertainty in Assessments of Species' Climate Change Vulnerability: Applications to Threatened Salmonids		Evaluating the Transferability of Flow-Ecology Relationships Across Space, Time, and Trait Guilds	
	Bryan Maloney*	Niall Clancy*		Alisa Wade		William Chen*	
10:40 AM	Spatial Positioning in a Desert Tributary Network Affect Larval Growth, Recruitment, and Community Associations of an Imperiled Migratory Catostomid	Ecological Tradeoffs Between Commercial Salmon Fisheries and Foraging Opportunities for Trout		The 2015 Columbia River Salmon Migration-An Omen for the Future in a Warming World?		Restoring Streamflow in Coastal California	
	Nate Cathcart	Timothy Cline*		Jeff Fryer		Matt Clifford	
11:00 AM		Effects of Nonnative Brown Trout on the Foraging Ecology of Rio Grande Cutthroat Trout				Restoring Streamflow in Oregon's Deschutes Basin: Tailoring Tools to Context	
		Quintin J. Dean*				Kate Fitzpatrick	
11:20 AM		Exploring the Isotopic Niche in Rocky Mountain-Great Plains Fish Communities				Instream Flow Protection in Washington State: Mitigation Challenges and Opportunities	
		Bryan Maitland*				Kiza Gates	
11:40 AM		Can We Manage Resource Subsidies and Food Webs to Benefit Fishes and Fisheries?				Colorado's Water Plan: Stream Management Planning and Watershed Health	
		Mark Wipfli				Chris Sturm	

Contributed Presentations: Environmental Biology		Contributed Presentations: Salmon and Hatcheries	Forging Stronger Links Between Freshwater Food Web Ecology and Fisheries Management	Contributed Presentations: Genetics	Environmental Flow: Using Instream Flow and Water Policy to Benefit Western Fisheries
Room	330	331	332/333	336/337	Theater
Moderator	Kari Dammerman	Paul Kusnierz	Mark Wipfli	Matt Boyer	Christopher Estes and Tracy Wendt
1:20 PM	Sound Passages in Migration of Semipelagic Icefish Ryszard Traczyk	Evaluating the Size Selectivity of Mid-Water Trawls for Sampling Kokanee Zachary Klein*	Partnering to Preserve Natural Diversity, Ecosystem Health, and Subsistence Fishing Opportunities Across the Yukon River Basin. Aaron Martin	Ash Meadows Amargosa Pupfish: Genetic Effectiveness Monitoring Mary Peacock	Environmental Flow Restoration: Perspective from the Trenches Jedediah Whiteley
1:40 PM	Saving Genetic Material in Growth of the Otolith Ryszard Traczyk	A Comparative Analysis of the Bristol Bay, Southeast, and Kenai River Fisheries: Tracking Stakeholder Participation over the Last 15 Years Meagan Krupa		Juvenile Sampling of Bull Trout for Genetic and Population Monitoring Stephen Amish	Forecast Informed Reservoir Operations: A Tool to Manage Flows for Fisheries, Water Supply, and Flood Control in California's Russian River Watershed David Manning
2:00 PM	Changes in Water Chemistry and Biological Communities Associated with Metal Mining in Streams in the North Cascades Brooke Bannerman*	Spawning Area Residence Related to Freshet Timing in an Ocean-type Chinook Salmon Population Roger Dunlop		Responding Rapidly: Use of Real-Time Genetic Analysis and Genetic Monitoring to Conserve Bull Trout in the Lower Columbia River. Brice Adams	Environmental Streamflow Restoration in the Eastern Cascades through Large Scale Irrigation Improvements and Improved Water Management Aaron Penvose
2:20 PM	Mercury, Selenium and Microbial Dynamics in Water and Sediment During High- and Low-Flow, Bighorn Lake, Bighorn National Recreation Area, MT/WY Elliott Barnhart	A Potential Success Story of a Conservation Hatchery Jennifer Von Bargaen		Genotype-Environment Interactions Increase Summer Growth of Hybrid Rainbow x Cutthroat Trout in Three Wild Populations Jeffrey Strait*	Multi-Scale Response of Migratory Native Trout to Irrigation-Based Restoration in the Blackfoot Valley, Montana Ron Pierce
2:40 PM	Evaluating the Distribution of Estrogenic Effects Below Wastewater Treatment Plants: Estrogen Persistence and Fish Movement Jordan Anderson*	Columbia River Basin Steelhead Kelt Reconditioning Research Andrew Pierce		Introgression between Native Redband Trout and Coastal Origin Hatchery Rainbow Trout in the Northern Great Basin Patrick DeHaan	Total Dissolved Gas Levels Below Foster Dam and Implications for Chinook Salmon and Steelhead Populations Ryan Flaherty
3:00 PM	Break				
3:20 PM		Parentage Based Tagging Reveals Overestimation of the Proportion of Natural-origin Chinook Salmon and Steelhead in the Columbia River Basin Daniel J. Hasselman		Adaptation to Residency in Rainbow Trout Above Barriers to Migration: Alternative Molecular Pathways Towards a Predictable Phenotype Matthew A. Campbell	Fine Tuning the Relationship Between Shovelnose Sturgeon Spawning and Discharge in a Tributary to the Missouri River, Montana Anne Tews
3:40 PM		Evaluating Minijack Rates in Spring Chinook: Comparing Minijack Rates Based on Spring Plasma 11-ketotestosterone Levels with Rates Based on Fall GSI Lea Medeiros		eDNA Detection Sensitivity in Lakes and Streams: a Comparison of High and Low Volume Water Samples Stephen Amish	Restoring Flow and Rehabilitating Diversion Structures in the Lostine River, Oregon: Benefits to Chinook Salmon Spawning Migration Aaron Maxwell
4:00 PM		Monitoring and Evaluation Programs at National Fish Hatcheries in the Columbia River Gorge Kari Dammerman			The Yellowstone Concerto and the Hidden History of Film in Environmental Protection Movements Nick Bergmann