The Tributary

The Newsletter of the **W**estern **D**ivision of the **A**merican **F**isheries **A**ssociation

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WDAFS EXCOM: Who are they and what do they do?

See full article on page 11

Photo:Left to right, back row – Alix Blake and Zach Klein; second row – Jackie Watson, Cleve Steward, Shivonne Nesbit, Cassie Mellon, Rick Henderson, Joe Merz, Brian Missildine, Travis Neebling; front row – Leslie Nyce, Aaron Martin, Mary Beth Lowen, Jay Hesse

In this issue:

President's Hook

By Cleve Steward, WDAFS President

WDAFS members are a diverse bunch – men and women who work for state and federal wildlife agencies, schools and universities, local governments, Indian Tribes, conservation NGOs, consulting companies; as well as a fair number of retired but active natural resource professionals. As members of the largest Division of the world's "oldest and most influential society" of fisheries and aquatic resource professionals, we share a common bond and commitment to each other and, in particular, to the science and wise management of fish and wildlife resources in the western United States, Mexico, and Pacific Islands. We dedicate ourselves to these goals for our own benefit, for the benefit of society, and for the benefit of future generations.

I've been accused on occasion of living in "La-La Land" (not the movie, but my own particular dream world), espousing tolerance and cooperation when a more aggressive "in your face" stance might be warranted. Certainly, having run my own consulting firm and worked at various times in my career for a university, federal agency, and non-profit organizations, I have a broad and collegial perspective. I've come to appreciate and rely on the support of my colleagues, whether they agree with me or not. I also appreciate confrontation and direct action, if justified.

I mention this to underscore an important point. Our profession, indeed, society as a whole, is at a crossroads – a confluence, if you will, of several powerful forces that will affect us individually and collectively for decades to come. Much is at stake. I feel strongly that we need to address these issues head on. To do otherwise would be to invite disaster.

Climate change. I know you're sick of hearing about global warming – and the sometimes raucous debate that passes for public discourse. Some of you may have forsworn talking about climate change, either voluntarily or because you've been compelled to. However, I'd hazard to bet that each of you would be willing to acknowledge that climate change is happening, that it has reached a critical stage, that humans are responsible, and that we need to take action to avert potentially catastrophic impacts on human and natural systems. I'm certainly willing to entertain different points of view but only if there is evidence to back them up. So much for tolerance.

Here's another problem confronting WDAFS members: the radical change in policy and leadership that has attended the ascension of Donald Trump to the United States presidency. I apologize to those of you who do not like to mix politics with work (or pleasure, for that matter), but we need to acknowledge the challenges posed by an administration whose choices to head key government posts, including the Department of Commerce, Department of the Interior, and the Environmental Protection Agency, are at best ambivalent about environmental protection. It's too early to tell whether they will be outright hostile, but it's safe to say that many of the policies and

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protective regulations we operate under now will be weakened or undone. Funding for academic and government research and core services will probably take a hit, too. I fear that the emphasis on repairing America's infrastructure, which I generally view as a good thing, may be undertaken without adequate protection for ecologically sensitive species and aquatic habitats. Although I don't want to be labeled an alarmist or fearmonger, I'd be happy if my fears were overstated and steps were taken to ensure adequate protection and mitigation. Even if you don't share my political ideology, please take it on yourself to safeguard our precious natural assets.

There are numerous other forces at play, but the third and final one I want to address is the brain drain currently underway in our profession. Many of the baby boomer generation of fisheries biologists and managers who began their careers 30 or 40 years ago are retiring. A good number of biologists left the profession during the recent economic recession. Are we in danger of depelting our intellectual capital and knowledge of environmental science and natural resource management? I don't think so. Unlike the rather gloomy notes I struck with regard to climate change and political leadership, I truly believe that there are plenty of highly capable early- and mid-career biologists to meet future needs. There is also a large contingent of retired professionals who remain actively engaged in conservation efforts. All one needs to do is attend a WDAFS, Chapter, of Student Sub-Unit meeting to come away convinced that we're in good hands.

The key to the future, I believe, to the extent it can be influenced by WDAFS, is to continue to providing opportunities for learning, dialogue, and cooperation. WDAFS already does this through its myriad publications, meetings, committees, and other modes of engaging its members. I would be remiss if I didn't mention a publication recently released by AFS, the Future of the Nation's Fisheries and Aquatic Resources: The Challenges We Face in 2017 and Beyond. This well-researched document, compiled by Taylor Pool, Tom Bigford, and other AFS staffers with input from Western Division members, outlines solutions for protecting American aquatic habitats and helping fisheries professionals meet ongoing challenges. If you haven't read it, you can download it here: http://fisheries.org/wp-content/uploads/2016/11/Web-Policy-Brochure2.pdf. Please use it to educate others, including your Congressional delegates and other officials. We can counteract the negative effects of ignorance or bad policy by propagating good science. Don't be afraid to speak up.

Please keep an eye open for the soon-to-be released call for abstracts for oral and poster presentations for the May 22-25, 2017 WDAFS annual meeting (hosted by the Montana Chapter) in Missoula, MT. This is going to be a tremendous, unbelievable meeting, the biggest ever, folks, really great. OK, enough of my Trump impersonation. It's going to be a fantastic meeting nonetheless.

I want to end by reminding you (and myself) to renew your AFS, WDAFS, and Chapter membership before the end of the year. Renewing now makes it easier for us to plan activities and direct resources where they will do the most good. If you are looking for a tax deductible donation to make, or just want to give a gift to someone, please consider paying the annual membership dues of a friend or colleague. Remember to have them check the Western Division and Chapter boxes when they do!

A Note about the WDAFS Website

The WDAFS website was recently hacked and is currently being moved to the AFS server. In the process, we are redesigning the website and updating its content. We expect the WDAFS website to be up and running shortly after the New Year. If you are seeking information on the 2017 WDAFS meeting in Missoula, please go to: http://wdmtg.fisheries.org/. If you want to learn more about individual WDAFS Chapters, please visit their websites. Questions? Contact WDAFS President Cleve Steward at cleve.steward@gmail.com.

Native Fish Committee holds field trips to help university ichthyology collections

By Zach Klein and Dan Dauwalter, committee co-chairs

Every year or two (or three) the Idaho Chapter AFS Native Fish Committee holds a field trip to get is members into the field to see some of Idaho's unique native fishes. In 2016, the Committee worked with BYU-Idaho, the College of Idaho, Idaho State University, and the University of Idaho to sample fishes for each institution's ichthyology collection. One group focused its sampling effort on the Kootenai River while a second group sampled the Boise River. Each event was a huge success and collectively we had over 45 individuals attend the field trips.

The Kootenai River trip took place from September 3 – 4 and had a total of 15 attendees. Attendees represented the Palouse Unit of AFS, Idaho Department of Fish and Game, Idaho Chapter AFS, and Idaho State University. Sampling effort was focused on the mainstem Kootenai River and its tributaries to maximize the number of species sampled. Two groups sampled the Kootenai River with boat-mounted electrofishers and two groups sampled tributaries of the Kootenai River with backpack electrofishers. Both groups sampled a number of fishes representing 13 genera. Collected fish were preserved and will be distributed to BYU-Idaho, the College of Idaho, the University of Idaho, and Idaho State University to improve their current ichthyology collections.

The Boise River field trip was held on September 17th and was attended by ~30 people from BYU-Idah, the College of Idaho, Bureau of Land Management, U.S. Geological Survey, Idaho Department of Environmental Quality, Idaho Power, Trout Unlimited, and Idaho Chapter AFS members. Primary sampling occurred via backpack electrofishing in the Boise River. Approximately 15 fish species were collected, including the non-native oriental weatherfish (*Misgurnus anguillicaudatus*) that is a common aquarium fish and now naturally reproduces in the Boise River. Approximately 5 individuals of each species were preserved and sent to the four respective colleges and universities to supplement existing fish collections. In addition to

Photo: Torrent Sculpin collected from the Kootenai River

sampling fishes, Jim Reynolds (expert on all things electrofishing) briefed everyone on electrofishing theory and tested every backpack electrofisher on site to see whether electrical outputs were sufficient.

Both events were quite successful. Fishes sampled in 2016 will aid in educating future fisheries professionals (meeting the mission of the Committee!). Additionally, a number of individuals new to the field gained valuable experience with a number of sampling techniques. Although the event was planned and implemented by the Native Fish Committee, the field trips would not have been a success without the generous support of a number of entities. Funding for the Kootenai River field trip was provided by the Palouse Unit of AFS and the Idaho Department of Fish and Game provided technical support for the trip. The Boise River trip was largely funded by Idaho Chapter AFS 2016 Challenge Funds to the Native Fish Committee.

Share your news!

Let the Division know what your committee, Chapter or Subunit is up to by writing a piece for the WDAFS Tributary. Contact westerndivnewsletter@gmail.com

Small Grant Update

Physiological Responses of Fishes to Stressors Associated with Oil and Natural Gas Development in the Upper Green River Basin

By Richard H. Walker

Richard H. Walker | Program in Ecology | WY Cooperative Fish & Wildlife Research Unit | Department of Zoology and Physiology | University of Wyoming | rwalke15@uwyo.edu | @RichWalkerFish

BACKGROUND

Managers and ecologists are under increased pressure to quantify and understand how stressors, natural and anthropogenic, affect environmental and ecological change. With human population growth on the rise, one challenge facing managers is to develop a balance between resource use/extraction and wildlife conservation efforts. Stressors associated with resource extraction threaten the integrity of freshwater ecosystems. Surface disturbance associated with oil and natural gas (ONG) activities has been linked to increased sedimentation, nutrients, temperature, salinity, and metals, and decreased riparian cover and organic matter inputs; however, the ecological consequences of these activities are still not fully understood. Preliminary data from our study streams in the Wyoming Range indicate conductivity and temperatures are greater and more variable at sites with higher levels of ONG development.

Stressors, like increased conductivity and temperature, threaten the homeostasis of individuals and may cause changes from cellular up to population levels. Current knowledge of stress physiology comes primarily from studies using avian and mammalian models, with fewer studies from reptiles and fishes. Most physiological studies on fishes have been conducted on game species under aquaculture conditions, which can be difficult to extrapolate to field situations. Very little is known about the physiology of non-game species that dominate most North American freshwater assemblages. My research aims to bridge knowledge gaps in our understanding of fish physiology in relation to anthropogenic stressors. Specifically, I will conduct a combined laboratory and field study that measures changes in the physiological responses of Mottled Sculpin (*Cottus bairdii*) and Mountain Sucker

Photo: Pictures from research in the Wyoming Range and laboratory assays at Utah State University.

(*Catostomus platyrhynchus*) to stressors associated with ONG development. The objectives are to determine if non-game fishes experiencing increased levels of ONG development stressors (e.g., temperature and salts) exhibit: 1) differences in baseline concentrations of glucose, 2) differences in baseline concentrations of cortisol, 3) differences in stress reactivity, and 4) an impaired innate immune response.

In August 2015 and 2016, 15-20 individuals of each species were collected from streams in the Wyoming Range across a gradient of ONG development. Within 3 minutes of capture, a baseline blood sample was collected. In 2016, a 30-minute post-stress blood sample was also collected from each fish to measure an individual's stress-reactivity. Assays for measuring circulating cortisol and innate immune response are being conducted in collaboration with Dr. French's ecophysiology laboratory at Utah State University.

In fall 2017, individuals of each species will be collected from headwater streams in the Upper Green River basin. Fishes will be placed in aerated

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containers and transported back to the University of Wyoming's Red Butte Experimental Laboratory. I will randomly assign fish to aquaria in one of 14 conductivity (sodium bicarbonate ($NaHCO_3$)) and temperature (16°C and 23°C) treatments. Levels of $NaHCO_3$ will range from a control specific conductivity of 400 uS/cm to a high conductivity treatment of 1500 uS/cm. These conductivity values were chosen based on ranges measured in the field. At the end of the 30-day laboratory experiment, baseline and 30-minute post-stress blood samples will be collected in a similar manner as the field study.

PRELIMINARY FIELD RESULTS/DISCUSSION

For our 2015 samples, the radio-immune assay effectively measured circulating cortisol in these fish. There was a significant strong negative correlation between average baseline cortisol and *in-situ* specific conductivity for Mottled Sculpin (r = -0.93, P = 0.006), but no significant relationship was observed for Mountain Sucker (r = 0.40, P = 0.43; Figure 2).

Our preliminary results suggest stressors associated with ONG development can differentially affect fishes. Under the more stressful conditions, Mottled Sculpin appear to be down regulating their hypothalamus pituitary-adrenal axis, resulting in the release of fewer stress hormones and apparent acclimation to the associated stressor.

This research aims to enhance our knowledge and understanding of how anthropogenic stressors can affect freshwater ecosystems and their inhabitants. In addition, the present study is one of the first to combine field and laboratory work to assess the effects of multiple stressors on fishes. Understanding how fishes respond physiologically to chronic stressors associated with anthropogenic activities will help improve conservation and best management practices, and allow us to better understand species' adaptability in changing environments.

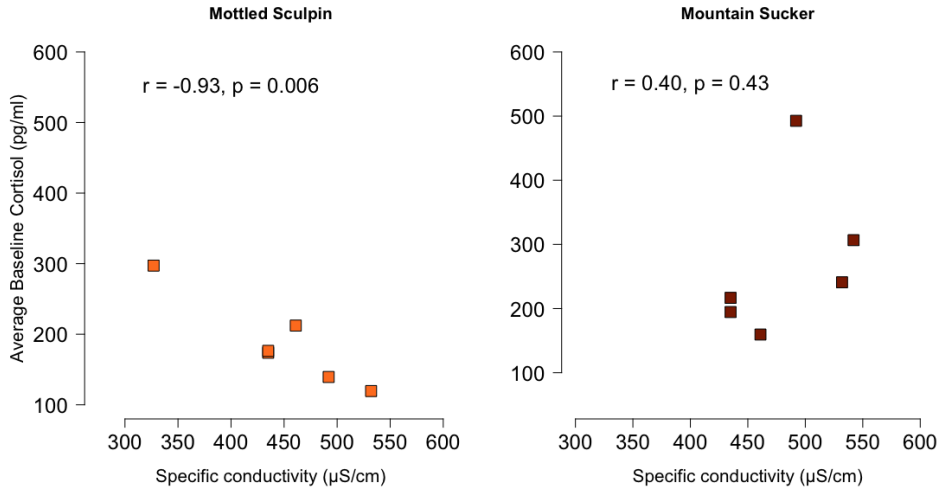

Figure 2. Relationship between baseline circulating cortisol as a function of in-situ specific conductivity for Mottled Sculpin and Mountain Sucker in headwater streams of the Wyoming Range from summer 2015.

Walker's research was funded in part by a small project grant from WDAFS.

WDAFS Small Project Grant Application Period Now Open

The Western Division currently has project funding available for Division Chapters, Subunits, and other fisheries-related groups. Grants are usually modest, but can help get a project started or be used to complement other funding sources. This year, the WDAFS Executive Committee approved a budget of $5,000 to fund as many small projects as appropriate. Applications must be received by the Western Division Past President, Jim Bowker, no later than January 5, 2017 at 5 pm Mountain Time. Questions should be directed at Jim Bowker jim_bowker@fws.gov. More information is provided at the end of this newsletter.

Novel Research for Exotic Brook Trout Population Eradication Earns IDFG National Award

By Dr. Dan Schill, Idaho Department of Fish and Game

Brook Trout are increasingly targeted for chemical or manual removal in streams and alpine lakes across western North America. However, piscicides are non-selective and politically unpopular in some areas, while complete eradication via manual electrofishing removal is rare. A new method relies on development of a hatchery broodstock whose progeny have no X chromosomes and therefore can produce (if successful in their spawning attempts) only male progeny. Theoretically, if enough YY males are stocked into the target population over time, the wild population will skew toward all males, thus eliminating recruitment and eradicating the population.

Photo: Alpine lakes receiving YY male Brook Trout treatments were stocked using a helicopter and a lot of coordinated helping hands.

Idaho Department of Fish and Game (IDFG) research and hatchery staff have successfully produced a YY Brook Trout broodstock and have begun extensive evaluations of its field performance. The first step involved the successful development of genetic sex markers for Brook Trout. This result, and use of 50 year old sex reversal technology commonly used in commercial aquaculture, enabled development of a YY broodstock comprised of both phenotypic male (sperm-producing) and feminized (egg-laying) YY male fish that were used to produce progeny for field experiments. Population simulations were conducted to quantify how long it would take to eradicate wild Brook Trout populations from Idaho alpine lakes and streams using various combinations of manual suppression and YY male stocking. Results predict that combining YY male stocking and a manual removal program in alpine lakes and streams could eradicate an undesired Brook Trout population in much shorter time periods than when either technique is used alone. In a pilot field study, IDFG stocked YY males into four Idaho streams and sought to confirm their successful spawning. Genetic analysis of fin-clipped fry collected from the stocked streams one year after YY male stocking demonstrated that YY males reproduced successfully in each stream, and that all progeny of YY fish were identified as XY males, as expected. The YY Male approach does not rely on genetic engineering or gene splicing but rather the simple re-arranging of existing chromosomal material and is therefore not a GMO. Based on the above body of work, IDFG has expanded field experiments to a total of 20 waters including 10 alpine lakes and 10 streams.

A paper describing YY Brook Trout broodstock development was recently published *(Schill D. J., J. A. Heindel, M. R. Campbell, K. A. Meyer and Elizabeth R. J. M. Mamer. 2016. Production of a YY Male Brook Trout*

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Broodstock for Potential Eradication of Undesired Brook Trout Populations. North American Journal of Aquaculture 78:1, 72-83) and a companion paper describing the simulation results is currently in review in the North American Journal of Fisheries Management. This work recently garnered IDFG the 2016 Sport Fish Restoration Outstanding Project Award in the category of Research and Surveys. Given the program success to date, efforts by IDFG have been initiated to investigate YY Male broodstocks for several other exotic species including Common Carp and Lake Trout.

Photo at right: Successful spawning of YY male Brook Trout results in all male progeny.

Bob Hughes Named 2016 AFS Fellow

At the American Fisheries Society Annual Meeting last summer, AFS president Ron Essig recognized eight fisheries professionals named as AFS fellows in 2016. Fellows are designated based on outstanding or meritorious contributions to the diversity of fields that are included in the American Fisheries Society. Western Division members Bob Hughes and Robert Lackey were named fellows in 2016. Lackey was featured in the 2016 Fall issue of the Tributary.

Bob Hughes stands out among the many fisheries biologists from the state of Oregon who have distinguished themselves in the field, office, and company of their peers. He is renowned for his passion for natural resource conservation and aquatic science stewardship. Over a long and successful career, Bob worked for the Environmental Protection Agency (retired), served as Associate Professor in the Department of Fisheries and Wildlife at Oregon State University, and held numerous chair and advisory positions with academic institutions, resource agencies, and scientific organizations in the United States, Europe, and South America.

Bob has demonstrated top-notch leadership at every level of the American Fisheries Society and spent countless hours working on behalf of its members. He served as ORAFS President (1994-1995), WDAFS President (2006-2007), and President of the AFS (2014-2015). Over the past two decades, Bob chaired numerous AFS standing committees and Sections, including the Water Quality and International Fisheries Sections, and remains active today in AFS affairs. His leadership, dedication, and integrity are a model for those who follow.

A full list of 2016 AFS Fellows can be found at: http://fisheries.org/about/awards-recognition/call-for-award-nominations/afs-fellows-program/

WDAFS student subunit updates

BYU-IDAHO AFS SUBUNIT
By Darcy McCarrick

Photo: Students working with Idaho Fish and Game biologist Brett High collect data and samples for their projects.

The BYU-Idaho AFS Student Subunit has continued to grow as we navigate the first year as a subunit. We kicked off the Fall Semester by attending the fish collecting trip with Idaho Chapter's Native Fishes Committee. The trip was a great opportunity to survey fishes across southern Idaho and interact with fisheries professionals from the west side of the state. We had a large student turnout for a clean-up at a community fishing pond which allowed us to effectively pick up trash on 15 acres of public land. Students had the opportunity to participate in volunteer opportunities with Idaho Fish and Game. We helped with gill net surveys on Ririe Reservoir in an effort to assess fish community changes as a result of an illegal introduction of walleye. Students also helped with trout density estimates on South Fork Snake River. In the last volunteer opportunity of the semester, students participated in a fish salvage project with a local canal company to capture fish from the canal and return them to Henry's Fork. In addition to these activities, students toured Idaho Fish and Game's Grace Hatchery and received an in-depth behind the scenes tour.

Our subunit continues to receive incredible support from local and state fisheries professionals. We had two speakers give seminars that helped provide students information about additional opportunities to be involved with fisheries management while completing their undergraduate education as well essential information for understanding how to be successful as fisheries professionals. Regional biologists both with state and federal agencies continue to provide opportunities for students to engage in fisheries activities and research, helping these students prepare for graduate school and future employment.

UNIVERSITY OF WYOMING SUBUNIT
By Bryan Maitland

Photo: University of Wyoming Student Subunit, by Professor Frank Rahel.

The University of Wyoming Student Subunit had an exciting fall 2016 semester! We held our first meeting over a BBQ in a Laramie park. Elections for new officers were held, and folks were able to catch up and share fun summer stories.

Our October meeting was comprised of short presentations by graduate students in the aquatic sciences. Talks included stories of Pacific Lamprey movements on the Columbia River, thermal tier development and regulatory guidelines for fisheries management in Wyoming, and parasitism in invasive snails. Students described their current research and shared insights into their personal inspirations that drove them to peruse a career in fisheries (along with some tips for undergrads making their way to a successful post-undergraduate career).

[SUBUNITS *continued on page 10*]

[SUBUNITS *continued on page 9*]
November was our most inspiring month as we put on a Tiger Muskie sampling field-trip to North Crow Reservoir with the Wyoming Game and Fish Department, and held a joint fundraiser with The Wildlife Society – Beast Feast 2016: Surf n' Turf edition! The field trip was a great experience With our AFS faculty advisors, Annika Walters and Frank Rahel, and John Fennell of WGFD, we processed gill nets, backpack electrofished the shoreline, and hook and line sampled for stocked Tiger Muskie. While we did not collect any, students were able to gain valuable experience using a variety of common fish sampling techniques and enjoyed a fall day by a beautiful lake.

That same evening, we held our November meeting and Jimena Goucher-Benavides (of Professor Katie Wagner's Evolutionary Biology Lab) talked about the littoral cichlid fishes of Lake Tanganyika. Jimena shared her awesome video of her field work with the larger AFS community, and wanted to share a link to a media outreach project (*Into the Rift* - intotherift.org) that highlights the work of Dr. Wagner and her collaborators in Kigoma, Lake Tanganyika. *Into the Rift* is an interactive website with a series of photos and videos featuring scientists doing field work in Lake Tanganyika.

Our December meeting featured Professor Katie Wagner, who talked about the "Pelagic fishes on Lake Tanganyika: what we know and where we're going". It was an insightful follow-up to our previous month's meeting where Jimena described in detail the Lake's littoral fish diversity.

Finally, as mentioned above, Beast Feast 2016 was a tremendous success! This event is the annual community fundraiser for the Wyoming Student Chapter of the Wildlife Society, and we partnered with them to raise funds for both of our organizations. In addition to bringing together ordinarily disparate groups of Laradise denizens over sweet and savory wild game and fish dishes, we collectively raised ~$1,200 dollars! These monies will directly support activities of TWS and AFS that prepare students for careers in wildlife & fisheries professions. I will close by saying that while a grouse dish won best in show (which was, admittedly, delicious…) us fishy folks represented the (cooked) slimy side of the world exceedingly well!

MONTANA STATE UNIVERSITY
The Montana State University Student Subunit has approximately 35 active members. Recent activities have included freshwater invertebrate sampling and field identification workshop, cover letter and resume workshop, guest speakers including FWP region 3 manager Travis Horton, students have volunteered on Ted Turner's property with electrofishing, documentary nights with End of the Line and Dam Nation.

Activities the subunit has planned are: Guest speakers including Dr. Al Zale, Mike Davis, and others. PIT Tagging, Electrofishing, and Jet boat maintenance workshops in the spring semester, field trips to state and federal fish hatcheries, workshops on how to get a seasonal position, raffle and silent auction at WDAFS meeting in May.

WDAFS Scholarships
Apply Now!
Deadline: April 1, 2017

The WDAFS scholarship program provides up to $5,000 annually to master's or doctoral students in the general area of fisheries science. The Sustainable Fisheries Foundation augmented the scholarship program by establishing the William Trachtenberg Memorial Scholarship Fund 2002, which provides up to $600 to a graduate-level student conducting studies on fisheries sustainability. Applications for the WDAFS scholarship program will automatically be considered for the Sustainable Fisheries Foundation scholarship program as well. More information located at the end of this newsletter.

Bob Gresswell, Western Division Scholarship Award Committee
bgresswell@usgs.gov

From the cover…

WDAFS EXCOM: Who are they and what do they do?

By Tracy Wendt

"Getting involved at this level in AFS was one of the best professional decisions I ever made. AFS has exposed me to a wider variety of issues and colleagues than I would have been otherwise. I worked with great people doing great things and gained valuable perspective. Plus, the exposure and added contacts have helped me in my consulting career." – Dave Ward, past WDAFS Secretary-Treasurer, past WDAFS President (Dave served as a WDAFS officer for EIGHT years, in addition to his three years in the Oregon Chapter presidency rotation.)

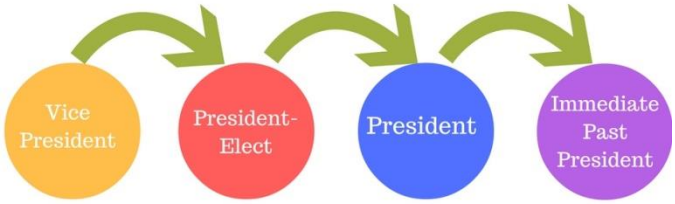
It takes a lot of work and organization to run the Western Division of the American Fisheries Society. Fortunately, we have a team of volunteers, otherwise known as ExCom, who are committed to running the show!

"I became involved with AFS to broaden my horizons and improve my leadership skills We are very salmon centric here in the northwest and belonging to AFS has given me the opportunity to travel to different AFS conferences around North America and to learn about different species such as sauger, catfish, gobies, etc. Being involved has also help me create a network of new friends and colleagues who share similar interests. Finally, AFS has provided me the opportunity to be in leadership roles where I can be more involved in AFS policy decisions at the chapter, division and national levels." - Brian Missildine, WDAFS President-Elect

All of the WDAFS ExCom (Executive Committee) officers commit time from their personal and professional lives to serve WDAFS. They participate in monthly coordination calls and meet in person semi-annually. They coordinate the planning of the WDAFS annual meetings, provide support to Chapters and Subunits, revise, interpret, and create new Division policies – and make sure those policies are adhered to, and so much more. The WDAFS ExCom is comprised of the six elected WDAFS officers and the Presidents of the Chapters within the Western Division.

"I value AFS' role in bringing fish-oriented people together into a community that fosters open dialog with professional development. Learning about the work of other fisheries professionals is exciting and helps me do a better job for my employer and the natural resources we are blessed with." – Jay Hesse, Idaho Chapter President

The elected WDAFS ExCom officers are the President, President-Elect, Vice President, Secretary-Treasurer, immediate Past President, and the Student Representative. The offices of Vice President and Student Representative are elected each year, with President, President-Elect, and Past President being filled by the previous year's President-Elect, Vice President, and President rotating into the next appropriate position.



The Secretary-Treasurer has a two-year term in office. All office terms end and begin with the date of the Society Annual Meeting, which is typically held in late summer.

"[I got involved in AFS] to align my professional activities with my personal values, belong to a community of dedicated and talented individuals, several of which I call friends, and to give back to my profession and the fisheries resource." – Cleve Steward, WDAFS President

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To be an ExCom Officer, you must be a Society member in good standing for two consecutive years and must have attended a Division annual meeting in one of the preceding three years, and are nominated by the Nominating Committee. A full list of requirements can be found at wdafs.org/about us/bylaws-procedural-manual/#officers.

"*WDAFS has afforded me myriad benefits, from personal and professional connections to scholarships and funding opportunities. As such, I felt compelled to give back to the organization by serving current and future fisheries professionals to the best of my ability – Zach Klein, WDAFS Student Representative*

The current WDAFS ExCom elected officers are:
President: *Cleve Steward*
President-Elect: *Brian Missildine*
Vice President: *Jackie Watson*
Immediate Past President: *Jim Bowker*
Secretary-Treasurer: *Travis Neebling*
Student Representative: *Zach Klein*

"[I got involved for]…the chance to mentor other fisheries professionals…[to help] others grow as professionals and to discover the richness and value of AFS membership. Being an AFS unit officer has provided me a key to pass through doors to professional experiences that I thought might otherwise be locked. ..AFS is also about the personal. The kinships developed working with other passionate and committed members has forged friendships that will last a lifetime." – Jim Bowker, WDAFS Immediate Past President

Each office comes with specific responsibilities which are outlined in the WDAFS bylaws. In addition to various other duties that arise, the Bylaws describe these basic duties for each office:

The **President** presides at all meetings, serves as chair of the executive committee, represents the Division as a member of the Society's Governing Board, and appoints committee chairs.

The **President-Elect** represents the Division as a member of the Society's Governing Board, represents the Division as a member of the Society's Management Committee (if elected on an even year) and continues to serve on the Management Committee through Presidency, and serve as co-chair of the Program Committee.

The **Vice President s**erves as Chair of the Division's Membership Committee and as a member of the Division's Program Committee, and serves as member of the Society's Nominating and Membership Committees.

The **Secretary-Treasurer** keeps the official records of the Division, conducts correspondence on behalf of the Division, manages the Division's budget, Collects any fees or assessments as authorized by the WDAFS bylaws, disburses funds as authorized, and submits minutes for the annual meeting.

The **Past President** serves as chair of the Division's Nominating and Awards Committees and serves on the Division's Resource Policy Environmental Concerns Committee.

The **Student Representative** serves as a non-voting member of the Executive Committee and as a liaison between student subunits and the Division.

"I love being a part of AFS because it allows me to be a part of something bigger than my job description or my agency. I choose to be active in AFS leadership because I want to , in some small way, give back to the profession. The thing about AFS is, no matter what position/job I am in, I always know I'm connecte to a great people through our Society." – Jackie Watson, WDAFS Vice President

Behavioral Thermoregulation of adult Klamath Lake Redband Trout

By Jonny Armstrong and Bill Tinniswood,
Reprinted from the Oregon Chapter's Piscatorial Press

Upper Klamath Lake is home to some of the largest rainbow trout in the U.S., yet it also exhibits notoriously stressful water quality conditions. During summer, water temperatures in the lake can exceed 25ºC, dissolved oxygen often drops below 4 mg/L, and pH may exceed 10. The Department of Fish and Wildlife, Oregon State University and U.S. Geological Survey, U.S. Fish and Wildlife Service and Wild Salmon Center are collaborating to learn how the lake's trout are able to survive and thrive in a system where the majority of habitat is unsuitable for a substantial proportion of the year.

The goal of this research is to characterize the seasonal movements and foraging ecology of redband rainbow trout. The year-1 objectives are to (a) determine the water quality conditions associated with emigration from lake habitats to refuge habitats, (b) identify refuge habitats used during the summer, (c) quantify the seasonal timing of movements to and from the lake, and (d) determine the water temperatures used by fish in both lake and refuge habitats.

In late April and early May of 2016, 40 adult redband trout ranging in size from 520-762 mm were caught by hook and line near Eagle Ridge on Upper Klamath Lake and implanted with internal temperature-sensing radio transmitters and PIT tags. To track fish movements and habitat use, we have conducted weekly mobile telemetry surveys in Klamath Lake and its tributaries (via boat and vehicle). To determine the timing of adfluvial migrations and detect possible cyclic habitat use, we installed antenna arrays near the mouths of Pelican Bay and the Williamson River. Lastly we conducted aerial surveys in July and August to ensure detection of every tagged fish across the entire Upper Klamath Basin. Data collection is ongoing.

Bill Tinniswood (ODFW) and a >3 kg redband rainbow trout on Klamath Lake

Preliminary data show that all of the tagged redband trout moved to groundwater-influenced refuges to escape summer periods of poor water quality (i.e. water temperatures >20°C) and fish remained on these refuges from late-May to mid-September. Nearly all redband trout had left Eagle Ridge by mid-June, and 68% of tagged fish traveled up the Williamson River to find temperatures 5-10°C cooler than average lake temperatures. Most other redband trout traveled to various groundwater sources in and around Pelican Bay, often holding near groundwater springs that were ~ 8-12°C. Two individuals took refuge at the Wood River mouth, which was typically only a few degrees cooler than lake temperatures. Large schools of adult redband trout were frequently observed in Crystal Springs, the Rocky Point area,

[REDBAND *continued on page 14*]

[REDBAND *continued from page 13*]
and Harriman Creek, though only a few tagged fish were recorded in these areas.

The vast majority of fish remained in the same general thermal refuge area for most of the summer; however, a few individuals traveled long distances (tens of kilometers) between thermal refuges. Two individuals traveled to Pelican Bay mid-summer from the Williamson River and Wood River mouth. Two other individuals traveled from Pelican Bay to the Williamson River later in the summer. This demonstrates that fish can survive brief movements (i.e. <1d in duration) through highly stressful water quality conditions. All four fish that moved among refuges remained in their new refuge habitat for an extended period of time. These movements may be related to a period of colder air temperatures (cooling temperatures have been shown to trigger movement in some fish populations). The first week of September, three fish returned to Eagle Ridge from the Williamson River and one returned from Pelican Bay.

We are currently documenting more fish returning each week. During the fall and winter, collection of tracking data will continue in order to determine spawning location for each individual, time spent on spawning grounds, and investigate how spawning phenology associates with the duration of lake residence.

Major Findings:

- All of the redband trout in our study emigrated from the lake and resided on groundwater-influenced refuges during summer.
- The timing of emigration varied among individuals by ~ 6 weeks; some individuals left the lake before water quality conditions became stressful and others did not leave until surface temperatures were ~ 20°C and algae blooms had begun.
- Approximately 10% of the study fish were found to pass through the lake in July and August, when water quality was extremely low. One radio tagged redband visited all three major thermal refuge areas (Wood River Delta, Pelican Bay and Williamson River) during the period from July 15-August 1.
- Redband trout were almost always found in water temperatures below 20°C.
- The temperatures transmitted by the radio tags indicated that redband trout behaviorally thermoregulate to exploit fine-scale spatial variation in water temperature. For example, fish temperatures were often several degrees Celsius cooler than the surface water temperatures where they were detected.
- Redband trout returned to Klamath Lake before temperatures cooled to the theoretical physiological optimum of 15°C. As of September 14, ten radio tagged redband trout have returned to Upper Klamath Lake from the thermal refuge areas of the Williamson River and Pelican Bay. This represents approximately one third of the fish that survived the summer.

The Western Division of AFS Riparian, Watersheds and Habitat Committee would like to announce the call for 2017 Riparian Challenge Awards. Please consider entering a project you have worked on or nominating a colleague's project.

Entries must be received by February 15.

Please contact Tracy Wendt (406) 214-2868 tracywendt@gmail.com to request and entry form or if you have questions.

Montana Chapter AFS Celebrates its Golden Anniversary

By Joe DosSantos and Amanda Bryson, 50th Anniversary Committee Co-Chairs

This year's WDAFS meeting will mark the 50th Anniversary of the Montana Chapter, and we will be celebrating the Chapter's exceptional science, stewardship and dedications to our 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, assisting our Chapter's efforts in aquatic resource science and management and also being recognized on several occasions.

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. 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?

The 2017 WDAFS meeting held in Missoula is shaping up to be a fantastic event for everyone. Montana Chapter members, past and present, will especially want to attend. You just never know who will be there!

Contact Joe DosSantos (jw@blackfoot.net) and Amanda Bryson (abryson@mt.gov)
MTAFS 50th Anniversary Committee Co-Chairs for more information.

MONTANA CHAPTER GOLDEN ANNIVERSARY
AMERICAN FISHERIES SOCIETY
WESTERN DIVISION
MISSOULA, MONTANA, 21-26 MAY 2017

Call for symposia, papers and posters now open!

Please consider being part of this unique experience by submitting an abstract for a symposium, poster or contributed paper presentation. The call for symposia, poster, and contributed paper abstracts and additional information can be found at http://wdmtg.fisheries.org/.

Symposia abstracts are due by January 21, 2017.

Poster and contributed paper abstracts are due by March 21, 2017

WDAFS Awards Call for Nominations!

Please consider nominating a worthy person or group for one of the WDAFS awards listed here. All nominations must be sent to WD Past President Jim Bowker at jim_bowker@fws.gov and received no later than February 3, 2017. Details following this newsletter.

- ***Award of Excellence***
- ***Award of Merit***
- ***Award of Special Recognition***
- ***Robert Borovicka Conservation Achievement Award***
- ***Conservation Achievement Award***
- ***Outstanding Chapter Award***
- ***Outstanding Student SubUnit Award***

Travel Grants for the 2017 WDAFS Annual Meeting are now available!

Apply now for your travel grant! 2017 WDAFS Travel Grant Application. All application details can be found in the form.

Please note that the deadline for 2017 WDAFS travel grant applications is: February 13, 2017.

For questions regarding the travel grants and the application, contact Jackie Watson: jackiewatson@utah.gov

Casting a Broader Net – Increasing Diversity and Inclusion in the Fisheries Profession

The Oregon Chapter of the American Fisheries Society (ORAFS) is holding its 53rd Annual Meeting at the *Riverhouse on the Deschutes Convention Center*, February 28 – March 3, 2017 in Bend, Oregon. The Annual Meeting theme, ***Casting a Broader Net – Increasing Diversity and Inclusion in the Fisheries Profession***, continues with ORAFS' recent initiative to attract people of diverse cultural backgrounds, education, employment, nationalities, and disciplines to the fisheries profession. The plenary session and a technical session will focus on diversity and inclusion opportunities and challenges.

Workshops open for registration include:

- Science Talk: Guide to Sharing your Research with the Public
- Bayesian Analysis for Beginners and
- Genetics Theory and Application

Please check out the Annual Meeting website for more information about the plenary session, registration, workshop descriptions, networking events, lodging and more!

Save these dates in 2017

JANUARY 5
Applications for WDAFS Small Grants due.

JANUARY 21
Deadline for Symposia abstracts for WDAFS Annual Meeting.

FEBRUARY 3
Nominations for WDAFS awards due.

FEBRUARY 13
Deadline for WDAFS Annual Meeting Travel Grant Entries

FEBRUARY 15
Deadline for Riparian Challenge Entries.

FEBRUARY 9-11
AZ/NM Chapter Meeting – Farmington, NM

FEBRUARY 20-23
CO/WY Chapter Meeting – Grand Junction, CO

FEBRUARY 28 – MARCH 3
Oregon Chapter Meeting – Bend, OR

MARCH 1-3
Idaho Chapter Meeting – Boise, ID

MARCH 19-24
Alaska Chapter Meeting – Fairbanks, AK

MARCH 21
Deadline for Contributed paper abstracts for WDAFS Annual Meeting.

APRIL 1
WDAFS Scholarship Applications Due.

APRIL 5-7
CAL/NEVA Chapter Meeting – Eureka, CA

APRIL 10-13
WA/BC Chapter Meeting – Spokane, WA

MAY 22 – 25
WDAFS Annual Meeting in Missoula, MT: http://wdmtg.fisheries.org/.

JULY 16-20
World Recreational Fishing Conference in Victoria, Canada

August 20-24
AFS Annual Meeting – Tampa, FL

Western Division AFS Small Project Grants

Application open period

The Western Division currently has project funding available for Division Chapters, Subunits, and other fisheries-related groups. Grants are usually modest but can help get a project started or be used to complement other funding sources. This year, the WDAFS Executive Committee approved a budget of $5,000 to fund as many small projects as appropriate. Applications must be received by the Western Division Past President no later than **January 5, 2017 cob Mountain Time**. Questions should be directed to WDAFS Past President Jim Bowker (jim_bowker@fws.gov).

Evaluation Criteria and Application Procedures

The mission of the American Fisheries Society is to "improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting the development of fisheries professionals". Western Division AFS objectives are to provide a forum for exchanging technical and policy information, promote understanding by regional, Federal, and state policy-makers of the nature and extent of fishery matters of concern to the membership, facilitate timely exchange of information to chapters and the general membership, and provide a vehicle for the active participation of individual members in Society business and professional activities. Projects that clearly help achieve the AFS mission and Western Division objectives, either individually or collectively, will be prioritized for Division Grant funding over those that do not. To realize the greatest value from limited Division resources, projects addressing AFS goals and objectives, those with high visibility, those with other funding sources to cover some of the cost, and those with a greater fishery resource impact, will be given priority.

The Executive Committee will consider the following project elements when scoring grant applications and making grant funding decisions:

Does the Proposal:

1. Promote the AFS mission and WDAFS objectives (described above)? Suggest reviewing the AFS Strategic Plan and describe how the project addresses one or more strategy.

2. Incorporate and promote science-based management, conservation or understanding of fisheries resources?

3. Elevate the visibility of fisheries issues to a broad audience?

4. Need Division funding for completion of the project relative to other funding sources?

5. Have potential for generating revenue to the Division?

Application Process (TOTAL PAGES = 3) Applications over 3 pages will be disqualified. The applicant MUST include all of the information requested in #3.

1. A Western Division AFS member or sub-unit must submit the application.

2. Applications must be received no later than **January 5, 2017 (cob Mountain Time)** for consideration.

3. Applications must include the following information:

    a. Project Titles

    b. Name of requesting subunit or AFS member

    c. Applicant's AFS member number

    c. Name, address, phone number, fax number, and email address of contact(s)

    d. Project description (limit project description to 1 page). Address how the project fits into AFS and/or WDAFS mission and objectives.

    e. Estimated time to completion

    f. Amount requested

    g. Other funding sources and amounts provided

    h. Disposition of unused funds

4. Submit applications directly to WDAFS Past President at jim_bowker@fws.gov

Direct questions to WDAFS Past President Jim Bowker at jim_bowker@fws.gov

The Executive Committee will review applications and notify successful applicants **by March 1, 2017.**

The grants funding process is contingent on the availability of funds. Anyone wishing to donate to the grants fund is urged to contact the Division President, Cleve Steward at cleve.steward@gmail.com

WESTERN DIVISION AMERICAN FISHERIES SOCIETY
EUGENE MAUGHAN GRADUATE STUDENT SCHOLARSHIP

2017 Application Procedures

The Western Division is pleased to announce that applications for its graduate-level student scholarships are now being solicited. This scholarship program provides up to $5,000 annually in scholarships to masters or doctoral students in the general area of fisheries science with one to three awards to individual students. Beginning in 2002, the Sustainable Fisheries Foundation established the William Trachtenberg Memorial Scholarship Fund, which augments the Western Division scholarship program. This fund provides up to $600 annually to a graduate-level student conducting studies on fisheries sustainability. Applications for the Western Division scholarship program will automatically be considered for the Sustainable Fisheries Foundation scholarship program as well. An award committee of five fisheries scientists from the Western Division will make the decision regarding the award of scholarships from both programs. Selection criteria include demonstration of:

1. Excellent scholarship as evidenced by grades in rigorous course work during the last 60 hours as an undergraduate and during graduate studies.

2. Potential for future contributions to the fisheries profession through management, research, or teaching.

3. Significant progress toward attaining a graduate degree in fisheries science with a defined thesis or dissertation project.

The 2017 scholarships will be awarded at the annual meeting of WDAFS in Missoula, Montana, May 22-25, 2017.

APPLICATION CRITERIA AND PROCESS

1. Applicants must be a member of the American Fisheries Society or have submitted 2017 membership materials by the time of application. ***AFS Member number should be placed on application.***

2. Applicants must have completed one semester or two quarters in a graduate degree program at a university within the geographic boundaries of the Western Division.

3. Applicants must have a major field of study that is related to fisheries or aquatic science.

4. Applicants must submit an application package (**electronically *preferred***) that contains of each of the following:

A. A letter to the award committee that includes (***three separate items***):

1. A brief description of the student's degree program and the anticipated date of completion.
2. A statement of the applicant's career goals and reasons for applying for the scholarship (up to 200 words).
3. A statement of the academic and professional activities and contributions to AFS and the fisheries science profession (up to 200 words).

B. Copies of a resume (including professional activities, pertinent publications, and scientific presentations) and graduate transcripts. Please list GRE scores in your resume; a copy of the original form is *not* necessary.

C. A one-page abstract outlining the goals, objectives, design, methods and expected outcome from the thesis or dissertation project.

D. Letters of reference from two faculty members (one must be the graduate students advisor) familiar with the student's background and abilities. Letters may be sent separately by the individual providing the reference.

The application package should be sent electronically (or postmarked) no later than April 1, 2017 to:

Bob Gresswell, Western Division Scholarship Award Committee
USGS-NOROCK
2327 University Way, Suite 2
Bozeman, MT 59715
406-994-7085
bgresswell@usgs.gov

Welcome to Big Sky Country! The Montana Chapter is proud to welcome you as we host the 2017 Western Division Meeting. Located in western Montana, Missoula is a vibrant, active, and scenic setting, and a river really does run through it. The rich cultural and natural history of the region has inspired the conservation and management of fisheries for decades, guaranteed to infuse the range of work you'll see presented in Missoula. Be our guests, share information, and enjoy the company of your professional peers during this worthwhile event.

This meeting will mark the Montana Chapter's 50th anniversary, when we will celebrate a half-century of exceptional science, stewardship, and dedication to the aquatic resources our members hold dear. Please consider being part of this unique experience by submitting an abstract for a symposium, poster, or contributed paper presentation. The call for symposia, poster, and contributed paper abstracts and additional information can be found at: http://wdmtg.fisheries.org/.

Symposia abstracts are due by January 21, 2017

Poster and contributed paper abstracts are due by March 21, 2017

Mark your calendars for a one of a kind meeting you won't soon forget!

Western Division of the American Fisheries Society

Call for Nominations

Please consider nominating a worthy person or group for one of the WDAFS awards listed here. All nominations must be sent to WD Past President, Jim Bowker, at jim_bowker@fws.gov and received no later than Friday, February 3, 2017. All nominees must be AFS members except where noted.

Award of Excellence

For outstanding achievement and exceptional competence in fishery resource applications through monumental works, new methodologies, or multiple successful contributions that benefit our resources and profession

Award of Merit

For regionally significant and worthy contribution to the Society, Division, our profession, or our fishery resources

Award of Special Recognition

For making a significant contribution to the development and success of the Division (Non-AFS nominations accepted)

Robert Borovicka Conservation Achievement Award

For significant contribution to fishery conservation within the Division. This award is earned by an individual. (Non-AFS nominations accepted)

Conservation Achievement Award

For significant contribution by an entity such as an agency, tribe, or organization to the conservation of fishery resources within the Division.

Outstanding Chapter Award

For outstanding accomplishments related to the Society's Strategic Plan and Division mission over the 12-month period before the application deadline.

Outstanding Student Sub-Unit Award

For the most outstanding accomplishments related to the Society's Strategic Plan and Division mission.

The World Recreational Fishing Conference unites the global recreational fishing community and provides an essential forum to discuss current research.

Held every three years, this is the only international conference focused solely on recreational fisheries – an event you don't want to miss!

Your ticket includes access to all presentations, breakout sessions, networking events, coffee breaks, lunches, banquet & reception.

FEES

Early Bird - $375 CAD – $425 CAD after April 16, 2017 – Students - $275 CAD

To register, reserve accommodation, or submit an abstract, visit **wrfc8.com**

Freshwater Fisheries Society of BC

SPORT FISHING INSTITUTE OF BRITISH COLUMBIA

PACIFIC SALMON FOUNDATION

For updates, like and follow @WRFC8

2017 WA-BC Chapter Annual General Meeting

April 10—13, 2017 Spokane, WA

Get your abstracts ready! The 2017 Washington-British Columbia Chapter Annual General Meeting will be held April 10—13 in Spokane, Washington at the Hotel RL (http://www.redlion.com/park-spokane). The theme for this meeting is:

"Fisheries Collaborations: Tipping the Scales Toward Success"

Regular updates will be made on the AGM website (http://agm.wabc-afs.org). You can also contact President-Elect Tamara Knudson (tamarak@spokanetribe.com).

If you are interested in being a sponsor and/or exhibitor at the Trade Show, please contact Erin Rechisky (erin.rechisky@kintama.com).