



THE TRIBUTARY

A Newsletter of the

Western Division of the American Fisheries Society

Volume 34, Number 3

October 2010

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2010 AFS Annual Meeting

The 140th annual meeting of the American Fisheries Society was held in Pittsburgh, Pennsylvania, September 12—16, 2010. Over 600 oral presentations were given in almost 30 symposia. Additionally, over 140 posters were presented and 15 continuing education courses were offered.

A full report from the 2010 meeting planning committee will be released in the future.

The 2011 meeting is going to be exceptional, being a combined Western Division and parent society annual meeting, held in Seattle, Washington. More information on this meeting can be found on page 14.



2009—2010 Division Officers socializing with Burt the salmon; (L to R) Dave Ward, Burt, Lori Martin, and Leanne Roulson .

Officers

President

Lori M. Martin
Aquatic Biologist
Colorado Division of Wildlife
711 Independent Avenue
Grand Junction, CO 81505
Phone: (970) 255-6126
Lori.Martin@state.co.us

President Elect

Dave Ward
Columbia Basin Fish and Wildlife Authority
851 SW Sixth Avenue, Suite 300
Portland, OR 97204
Phone: (503) 229-0191
Dave.Ward@cbfwa.org

Vice President

Tina Swanson
Executive Director and Chief Scientist
The Bay Institute
695 De Long Avenue, Suite 100
Novato, CA 94945
Phone: (415) 878-2929, x26
Cell: (415) 272-4501
swanson@bay.org

Secretary-Treasurer

Mary Buckman
Biometrician (Oregon Department of Fish and Wildlife, retired)
3248 SW Long Avenue
Corvallis, OR 97333
Phone: (541) 752-2847
mary.buckman@oregonstate.edu

Past President

Leanne H. Roulson
808 Oregon Street
Belgrade, MT 59714
Phone: (406) 388-6194
leanne.roulson@msu.montana.edu

Please note that the Western Division officers passed the torch to their successors at the annual meeting. Leanne Roulson now serves as immediate past president. Please welcome Lori Martin as the new president of the Division.

President's Hook

Here in Grand Junction, Colorado, the dog days of summer have come to an end. The ever changing colors of fall, the crisp Rocky Mountain air, and the start of football season are just a few reminders that the snow will be flying soon, and winter once again will be settling in. Ah, yes. The push is on to finish the field season and get accustomed to life behind the desk once again.

My mind may miss those days either "out on" or "in" the water, but my body, on the other hand (no pun intended), anxiously awaits the less physically-taxing and ibuprofen-free days of being office bound. As my body recovers during the office-season, my mind will be challenged with new duties and responsibilities. I am anxious to begin my Presidency of the largest, and call me biased, BEST Division of the American Fisheries Society.

Thankfully, we are a Division full of tireless and talented volunteers passionately devoted to accomplishing our mission, efficiently, effectively and professionally. I am extremely fortunate to have a cadre of diverse individuals to learn from and rely upon as we make this a successful year for the Division and the Society as a whole. I look forward to working alongside all of you, as well as our new President of the Society, Wayne Hubert, who hails from the Western Division. President Hubert presents several innovative and exciting ideas within his Plan of Work entitled, "New Frontiers in Fisheries Management and Ecology: Leading the Way in a Changing World." I encourage you to visit the Society's website at www.fisheries.org where you can find this Plan of Work, the Society's Strategic Plan, and other beneficial information related to activities of the Society.

We have a busy year ahead of us; preparing for our 2011 joint meeting with the Society in Seattle, focusing on completing several projects from the past, and beginning new endeavors, as well. I will be working with the Division's Executive Committee over the next month as we develop our own Plan of Work and Budget for Fiscal Year 2010-2011. Please contact me directly or visit with leaders within your Chapters or subunits if you have any ideas or suggestions as we develop our game plan for the coming year.

Our success as a Division is dependent upon all of us. Communication and collaboration will be crucial as we strive to implement the Society's Strategic Plan, as well as the mission and goals of our Division. So, as I enter the office-season, I'm ready to serve alongside you as we tackle the complex challenges facing the Division and Society. Together, we will make a difference.

— Lori Martin
President, Western Division

Well, the year flew by. I just wanted to write a quick note to say thank you to all of the Western Division members, and especially to all of the excom, chapter officers, committee chairs, and other folks who contributed so much of their own time to discussions and actions that WDAFS participated in over the past year. Because we will be co-convening with the parent society in Seattle next September, it will be a long time between meetings for us. I sincerely hope that hiatus will spur you to raise issues at your chapter meetings, both within your chapter and with the Western Division officer in attendance. We do our best to try and send at least one executive committee officer to each chapter meeting with the intent to connect with and hear from chapter members. So, if Dave, Lori, Tina, Mary or I come wandering into the social at your meeting, come on up, introduce yourself and tell us what's on your mind. We promise to listen to you, even if you don't give us one of your drink tickets. Being your president was a heckuva ride, and I would highly recommend it to anyone who's interested. You know who you are.

Thanks again for all of your help,
Leanne H. Roulson
Past-President (whew) Western Division



Instream Flow Assessment Workshop

In 2007, the Public Interest Energy Research Program (PIER) of the California Energy Commission (CEC) established the Instream Flow Assessment Program (IFAP) through the Center for Aquatic Biology and Aquaculture of the University of California, Davis (UCD), to conduct research studies that identify and reduce adverse impacts on aquatic species and habitats from instream flow variations caused by the operation of California hydropower facilities. In 2008, the first request for research proposals was announced and three proposals were awarded funding from the PIER Program of the CEC through the UCD-CEC IFAP. In 2009, proposals were informally requested and one additional proposal was awarded funding.

December 7, 2010
UC Davis,
California

Research projects have been ongoing with all projects ending in December 2010. The IFAP Program Management Team is organizing this Workshop to disseminate the results of the funded research projects to all interested parties. Thus, the Team is proud to announce the Instream Flow Assessment Workshop to be held at the Buehler Alumni and Visitor Center, University of California, Davis on December 7th, 2010 from 10:00 AM to 4:00 PM, and hope that all interested parties will attend.

Registration form and detailed information of the Workshop can be downloaded found at:

<http://animalscience.ucdavis.edu/Instream/workshop.htm>

71st Midwest Fish and Wildlife Conference

The 71st Midwest Fish & Wildlife Conference scheduled for December 12-15, 2010 in Minneapolis is shaping up to be a premier event. The conference will feature over 360 technical presentations and 75 posters communicating the latest in fish and wildlife research, policy, and management. This outstanding program is sure to offer something for everyone.

December 12—15, 2010
Minneapolis,
Minnesota

The Hyatt in downtown Minneapolis will be our venue and you will enjoy the finest that Minnesota has to offer.

Registration for the conference is now open. You can register online with a credit card at www.midwest2010.org, or print a form at this web site and submit your registration by US Mail. In either case, you will take advantage of the very reasonable early registration fee of \$200 if you register by November 1. The conference program will be available on the web site in just a few days.

Plan now to attend the 71st Midwest Fish & Wildlife Conference. I look forward to seeing you there.



**71st
Midwest
Fish and Wildlife
Conference**

Minneapolis, Minnesota

Acoustic Tag and Hydroacoustic Winter Short Courses

Using Acoustic Tags to Track Fish

3-4 February, 2011 from 9 AM–5 PM in Seattle, Washington

http://www.htisonar.com/at_short_course.htm

This short course addresses all aspects of tracking fish movement with acoustic tags, including three-dimensional tracking with sub-meter resolution. The course includes hands-on operation and a variety of applications are covered. Lunch is provided. For more information or to save a seat, email support@HTIsonar.com.



Using Hydroacoustics for Fisheries Assessment

10-11 February, 2011 from 9 AM–5 PM in Seattle, Washington

http://www.htisonar.com/ha_short_course.htm

The hydroacoustic short course covers mobile and fixed-location survey techniques, and subjects include basic hydroacoustic theory, deployment logistics, data collection and processing, as well as typical results. Split-beam, single-beam, and multi-beam frequency techniques are discussed in detail. Lunch is provided. For more information or to save a seat, email support@HTIsonar.com.

Oregon Chapter Annual Meeting

The Oregon Chapter Annual Meeting, will be held February 23–25, 2011 in Bend Oregon, featuring a keynote address by Don Chapman on "Managing with Science, not Emotion" and over 150 technical presentations. There will also be several pre-meeting workshops.

February 23–25, 2011
Bend,
Oregon

New Website Tracks Salmon Recovery Results

We're pleased to announce the public launch of the Oregon Department of Fish and Wildlife's Salmon and Steelhead Recovery Tracker website. Under a unique partnership between nonprofits and government agencies, ODFW and the State of the Salmon Program are collaborating to improve access to salmon data. Together, we have created this interactive website so that ODFW can help those interested in the health of Oregon's salmon populations learn more about how salmon and steelhead are faring around the state.

We've learned a lot since funding was first awarded and are happy to say the site's navigation, major features, and the data model are at a point that we're ready to move forward with additional ESUs. If you were involved in usability testing this past winter or spring, thanks again. The insight you provided has helped create a better website.

View ODFW's press release here: <http://www.dfw.state.or.us/news/2010/september/091010.asp>

A news bite can be found here: <http://ecotrope.opb.org/2010/09/are-we-there-yet-track-salmon-recovery-online/>

Finally, The tracker website can be found here: <http://odfwrecoverytracker.org/>

Best Student Paper and Poster Awards at the Western Division Meeting in Salt Lake City, Utah

The results of the 2010 Best Student Paper and Poster awards are in from the meeting in Salt Lake City Utah. Posters and oral presentations were judged separately. There were 37 student oral presentations and each was assigned to three judges. The overall average score out of 50 for all oral presentations was 32 ± 7.2 SD. The highest score was 40.7, achieved by Thomas Pool from the University of Washington. Thomas presented on "Taxonomic and functional homogenization of fishes in the Lower Colorado River Basin". Congratulations Thomas!

There were 15 student posters and each was assigned to three judges. The overall average score out of 50 for all posters combined was 32 ± 10.9 SD. The highest score was 41.7 achieved by Eric Fetherman from Colorado State University. The poster reported on "Manipulation of Sport Fish Growth to Reduce Mercury Bioaccumulation on a Whole-lake Scale" Congratulations Eric!

We also thank Chris Hoagstrom, Weber State University, for organizing the judging of presentations and posters.

Student Paper and Poster Competition at AFS Cal-Neva Chapter Annual Meeting

For the tenth straight year, the [Northern California District](#) of the American Institute of Fishery Research Biologists (AIFRB) presided over the judging of student presentations and posters at the 44th Annual American Fisheries Society Cal-Neva Conference and 28th Annual Salmonid Restoration Conference that took place on March 10-13, 2010, in Redding, California. Student papers and posters were in the running for cash prize awards, including \$150 each for Best Student Presentation and Best Student Poster. Best Student Presentation – Runner-up, and Best Student Poster – Runner-up each were awarded \$125, with third place in each category receiving \$75. All winners received a certificate signed by both organizations (Cal-Neva Chapter AFS and Northern California District AIFRB).

The 2010 award winners were:

Student Presentations

Best Student Paper	Ryan Slezak, Humboldt State University
Best Student Paper – Runner-up	Michael Hellmair, Humboldt State University
Best Student Paper – Third Place	Joe Sullivan, University of Nevada

Student Posters

Best Student Poster	Jon Reardon, Humboldt State University
Best Student Poster – Runner-up	Halley Nelson, UC Davis
Best Student Poster – Third Place	Chris Mosser, UC Davis

Congratulations to the winners and many thanks to the Northern California District judges who participated in the student evaluations.

Student Representation in WDAFS

Students need to have a representative on the Western Division AFS Executive Committee (WDAFS EXCOM) to represent the student perspective and facilitate communication between members. It has been brought to my attention that there is disconnect between Western Division and the student subunits. As a result, many opportunities for students are underutilized and participation of students at the annual Western Division meetings is scarce. At the 2010 annual WDAFS EXCOM meeting, I proposed the necessity of a student representative at WDAFS EXCOM meetings. Much of the WDAFS EXCOM favors the idea; however, there are some details to discuss. I am interested in your ideas for student involvement, communication, and representation in the Western Division.

I first learned about these issues when I began advertising the 3rd Annual Western Division AFS Student Colloquium. The colloquium is designed to be a networking experience for all student participants by including professionals from different agencies and universities. In addition, undergraduates and graduate students will present their work to their peers and gain experience in public speaking in a supportive environment. Advertisement of this event is critical to generate support from AFS chapter members and ensure high levels of student participation. However, it is very difficult to find current contact information for student subunits. While most subunits have links on the Western Division website, some links are expired and many student websites are out-of-date. As I searched for contact information, I realized how much easier the process would be if I could work with someone who had the information for all subunits in the Western Division. A student representative from the Western Division could help facilitate this process.

The Western Division of AFS has numerous awards and grant opportunities available to students including best student subunit, travel awards to meetings, scholarships, and grants. Unfortunately, many students are not aware of these awards so they do not apply for them. Opportunities are available to students who are able to attend the Western Division meetings. However, it is an investment for the student to get to the meetings. A student representative would help ensure that award announcements are sent to all subunits. Furthermore, the representative would participate in planning annual meetings and work to defray the cost of attendance at meetings for students.

I attended this year's annual meeting in Salt Lake to promote the 3rd Annual Western Division AFS Student Colloquium, and present my work. Additionally, I was also invited to attend the WDAFS EXCOM meeting to discuss student representation and involvement. The lack of student representation and communication were discussed and members of WDAFS EXCOM were receptive to the idea of having a student representative at their meetings. When I discussed the possibility of a student representative with other students at the meeting, many were in favor of student representation at the Western Division level. A student representative would help facilitate communication among student subunits, help other students attend AFS meetings, and be a great contact person to discuss problems associated with student subunits, such as membership or starting a student subunit. Questions were raised among EXCOM about how subunits would select the representative, the level of participation that would be expected from the representative, and their duties and responsibilities. These details still need to be worked out.

Other divisions of AFS have a student representative to help facilitate communication between student subunits and society members, and I feel strongly that Western Division should have one as well. Student involvement and representation in the higher levels of AFS has helped students and professional members by providing more networking, leadership, and mentoring opportunities. From a student perspective, more student involvement in AFS will benefit the organization by increasing membership, congruity, and achievements.

Please take a few minutes to complete a brief survey at: <http://www.surveymonkey.com/s/NWHFRH2>

Also, feel free to email any comments, ideas, or suggestions about a WDAFS EXCOM student representative to me (stoc4872@vandals.uidaho.edu).

By: Kelly Stockton

Kelly Stockton is a M.Sc. candidate in Fishery Resources at the University of Idaho and serves as the president of the Palouse Unit AFS.

NMFS moves to improve habitat science and publishes the Marine Fisheries Habitat Assessment Improvement Plan

The National Marine Fisheries Service (NMFS) has released a new planning document to guide habitat research in the agency. The *Marine Fisheries Habitat Assessment Improvement Plan* (HAIP) outlines current gaps in its habitat science, defines habitat assessments, and provides direction for a nationally-coordinated habitat science program. There are ever-increasing demands being placed on marine habitats across many sectors of the U.S. economy, but the role of marine habitats in supporting fishery production and in providing other critical ecosystem services is poorly understood. A continuing lack of knowledge about the relationships between marine species and their habitats impedes effective resource management. The HAIP finds that such gaps in NMFS' current habitat science limit its ability to achieve sustainable fisheries and meet the mandates of the Magnuson-Stevens Act. The document is intended to serve as a blueprint for NMFS for coordinating its diverse habitat research, improving habitat assessments, and guiding efforts to increase support for habitat science.

With full support and implementation, the plan will: 1) develop the habitat science necessary to meet the mandates of the Magnuson-Stevens Act and the economic, social, and environmental needs of the nation; 2) improve NMFS' ability to identify essential fish habitat and habitat areas of particular concern and assess impacts to these areas; 3) reduce habitat-related uncertainty in stock assessments and facilitate a greater number of advanced stock assessments, including those that explicitly incorporate ecosystem considerations and spatial analyses; 4) contribute to assessments of ecosystem services; 5) enable NMFS to be prepared for management challenges associated with climate change; and 6) contribute to ecosystem-based fishery management, integrated ecosystem assessments, and coastal and marine spatial planning.

Copies of the HAIP are available online at <http://www.st.nmfs.noaa.gov/st4/>, or may be requested by contacting the NMFS Office of Science and Technology, Assessment and Monitoring Division at (301) 713-2363.

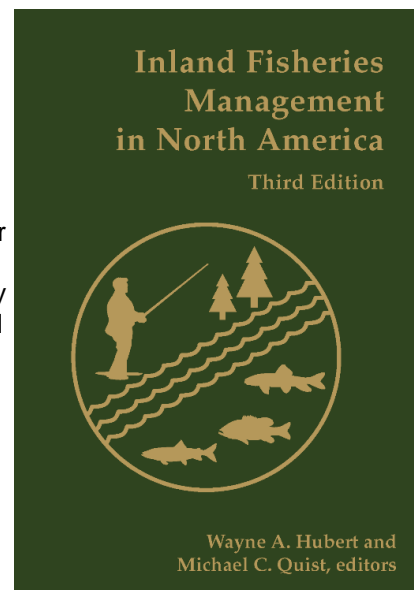
Third Edition of Inland Fisheries Management in North America

This book describes the conceptual basis and current management practices for freshwater fisheries of North America. This third edition is written by an array of new authors who bring novel and innovative perspectives. The book incorporates recent technological and social developments and uses pertinent literature to support the presented concepts and methods.

Covered topics include the process of fisheries management, fishery assessments, habitat and community manipulations, and the common practices for managing stream, river, lake, and reservoir fisheries. Chapters on history, population dynamics, assessing fisheries, regulation of fisheries, use of hatchery fish, and the process and legal framework of fisheries management are included along with innovative chapters on scales of fisheries management, communication and conflict resolution, managing undesired and invading species, ecological integrity, emerging multispecies approaches, and use of social and economic information.

The book is intended for use in fisheries management courses for undergraduate or graduate students, as well as for practicing fisheries managers.

This book will be available later this month through the AFS bookstore. The editors can be contacted at Wayne Hubert (whubert@uwyo.edu) and Michael Quist (mcquist@uidaho.edu).



Two Fish Biologists Write a General Conservation Text

Protecting life on Earth: an introduction to conservation science by Michael Marchetti and Peter Moyle has just been published by University of California Press (Paperback, 232 pages, ISBN: 9780520264328, \$49.95). This book was written for introductory courses for non-majors, especially non-science students, so it is short, easy to read, with lots of illustrations. It also emphasizes vertebrates, reflecting both the interests of the authors and the need to capture student interests using charismatic species (mostly) as examples. The book starts with environmental history, showing how we got where we are today, then moves on to basic evolution and ecology. Following chapters deal with such topics as extinction, climate change, sustainability, conservation law, economics, and invasive species. It ends with a chapter on what the readers can do to make things better.

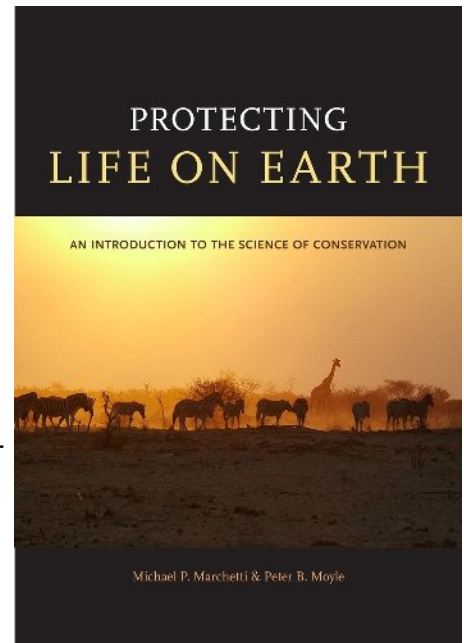
The book is based on essays that were first written in the 1980s, initially by graduate students in a text-book writing class I taught at University of California, Davis. The essays were written specifically for my freshman-level course in wildlife ecology and conservation. Over the years, they evolved along with the course, through many revisions by myself and occasionally other faculty. Michael Marchetti first encountered the essays as a teaching assistant in the course and then began using them for his own course as a faculty member at California State University, Chico. After using the essays for a few years, he decided that he wanted to completely revise the text and seek formal publication of it. The result is a book with perhaps more fish examples than most conservation texts but also wide coverage of the field.

The students we had in mind for the text are both those already with an interest in conservation, if unformed, and those liberal arts students who take our classes for an 'easy' science credit. For the latter students we try to both challenge them and create interest where it was lacking before. Sometimes this even works. Of course, the text is just one part of our courses, which include self-guided field trips, illustrated and interactive lectures, guest lectures, and lots of writing.

Beginning with a brief introduction to environmental history, the text introduces the central concepts of evolution and ecology, and covers several major issues related to the conservation of biodiversity including. The text even includes practical advice on the decisions we make every day—how we spend our money, where we live and work, what we eat and buy. Throughout, *Protecting Life on Earth* underscores the ways in which our future is tied to that of Earth's threatened species, and demonstrates exactly why conservation is so vitally important for us all.

Although available initially as a paperback, the text should also be available fairly soon on-line from the press, for a lower price. We hope this will increase flexibility in use of the chapters.

To obtain examination copies for potential use in a course, go to the University of California Press website. The authors can be contacted at Peter Moyle (pmmoyle@ucdavis.edu) and Michael Marchetti (mmarchetti@csuchico.edu).



Electricity Above, Electricity Below: Reflections on a Month of Amazon Stream Sampling

Author: Bob Hughes - Hughes.Bob@epamail.epa.gov

As part of a multi-university, multi-assemblage assessment of the effects of economic growth on Amazonian ecosystems, I spent July 2010 sampling the fish and physical habitat structure of wadeable streams tributary to the Amazon River in Para state, Brazil. Most sites were unlike any I had previously sampled—more like swamps with one or more channels passing through them. The wetlands on both sides and the channels themselves typically had bottoms of knee-deep mud mixed with leaves and crisscrossed with live and fallen trees and lianas. They were tough to work, so each team had a matero with a machete to cut trails to the streams, through the vegetation, and to assist with the sampling. These were knowledgeable people, who also supplied fresh cut palm hearts from the palms lining the streams, lianas that produced drinking water, and helped us avoid wasp nests and poisonous snakes. We also sampled a few sand-bottomed streams without the wetlands, a rocky-bottomed stream without wetlands, and a marsh stream (the bank full channel was tall grass rather than mud) with a narrow, chest deep channel, fairly fast current, sand bottom, and undercut banks.

Of course the fishes we caught differed from those in the western USA, including totally different orders. My favorites were the gymnotids which communicate with electrical pulses. One type (*Gymnotus*) lives under the undercut vegetation lining the stream banks; the other type (*Gymnorhamphichthys*) lives in the clean sand of sand bottomed streams (both are long, thin and laterally flattened). We also encountered occasional caimans and an electric fish that can generate 500 volts at 1 amp and 500 watts (similar to a boat electrofisher). In our case, it just sent a warning and left the site, because we did not encounter it again, which was fine because we would have been holding metal framed nets or a seine with a stainless steel chain while wading in chest deep water—definitely not a desirable situation. We also frequently caught fairly large dogfish (*Acestrorhynchus*; fish with large eyes and large teeth) with which one must be careful when handling. We typically collected 10–20 fish species in sites 150 m long by 3 m wide; fewer species and individuals in smaller and more disturbed sites.

Aside from the mud of those streams, we also typically enjoyed palms with long spines that easily punctured boots and skin, small biting ants that bite their way down from neck to waist after entering shirts or from ankle to waist when entering pants (those bites swelled and itched for days), wasps that built small nests under the leaves of plants about shoulder level over the streams (their stings produced the same swelling, itching and persistence as the ant bites), lianas that tripped the old and clumsy (like me), a fire liana that burns the skin and leaves a mark that lasts for days, occasional poisonous snakes (mostly fer-de-lance, *Bothrops*) in the water and in trees overhanging the water, and friendly ticks and chiggers that hitched rides when we contacted vegetation while walking to and from the streams.



A different class of vertebrate.



Acestorhynchus.

We sampled sites along a disturbance gradient from pristine forest to industrial agriculture. One of the interesting aspects of the agriculturally disturbed sites was the people living nearby. Despite being what we would call poor, they were typically very friendly, provided tips on how to reach the sites most easily, confirmed our estimates of stream hydrology (bank full height and width) and often provided us with fresh coffee, fresh fruit from their trees or grilled meat from their grills. We occasionally had neighborhood children watching our every move and helping us with the fishing, and ox and horse carts were not uncommon—unlike the car filled streets of Brazilian cities. The adults also liked to talk; so it often took half an hour between arriving at the site and beginning to sample it. Their homes were made of wood, unlike those in urbanized Brazil. Some were elevated above the ground (for cooling and to decrease termite infestations), with windows lacking glass and screens, but with wooden shutters. The poorer homes were not elevated, often lacked windows altogether, and had only a fence gate for a door to exclude the chickens and dogs. The land near the homes was typically devoid of grass or leaves (packed clay mostly) with shade and fruit trees, chickens running about, and multiple dogs and cats. The people seemed to sit around in the shade a lot (it was very hot and humid), but worked very hard and every day on their farms. The women washed clothes on long heavy boards just above the stream level with soap, brushes, and slapping (I had my field clothes laundered weekly in this manner and they came back smelling fresh and clean—far different than how they smelled and looked when presented for washing). Whenever possible, we also used the laundry boards to rinse the mud from our boots and clothes before leaving the sites. Laundering was a social event with women and children all taking part in the washing and conversation. Another social event was making farina from manioc (a starchy tuber and staple food in that region). The tubers were peeled and chopped at one station, soaked in water at another, pounded to a pulp and pressed in a third location, and then roasted over a wood-fired pan about 1 x 3 m in area, while stirring. The manioc stations were 3 x 6 m in area, typically open-air with a thatch roof to resist the rain and provide shade yet allow some air circulation for the processing and cooking. They were community affairs with multiple families processing the food. Some sites we sampled required 15 minutes of hiking on well-worn trails that led to small settlements of about 12 dispersed homes accessible only by foot, horse, bike, or motorcycle, where the residents grew most of the food they needed as well as small cash crops for sources of income. Of course, they also had the ubiquitous dirt futbol field and the males typically showed up for a match as we departed in the afternoon.

The field station that served as our home base was quite comfortable. It had a kitchen with an excellent cook, a dining/meeting room, a shower/toilet house, 2 bunkhouses with 2- and 3-bed (or hammocks) rooms, a 70 m deep well for water, and a septic tank for wastewater. There was an antenna for irregular email communication and a diesel generator (often in use because of power failures). The buildings were all joined by elevated wooden walkways (to aid in avoiding crawling critters with nasty biting habits) and the backs of the bunkhouses also had covered walkways and benches and lines for changing and drying (somewhat) clothes. We did not bring unwashed field clothes or boots into our rooms because we did not want to colonize our sleeping quarters with the arthropods that may have been hitchhiking in them. The evenings were filled with the noise of cicadas and katydids.



Searching through detritus for fish in a mud bottom stream.



Gymnorhamphichthys.

In the mornings we had parrots squawking in the trees, and at least once a week before dawn, howler monkeys filled the forest with their awesome roars for about 20 minutes. Early mornings were also great times to encounter large tropical arthropods. The first morning at camp, I found a 6" long centipede, which has a very nasty bite but was not aggressive. However, the second evening at camp, I made the mistake of putting a bare foot on the walkway and was greeted by the sting of a bullet ant. This ant is said to have the most painful sting in the insect world. My foot throbbed with neurotoxin pain the entire night. The heat and humidity of the rain forest were bearable, mostly because we were wading in streams 6-8 hours per day. We showered after returning from the field to remove the dirt and sweat and some percentage of the insect life from our skins. The cold showers also helped cool our bodies in the evenings. Although we sampled during the dry season, we had intense thunder showers every 1-3 days; and because of the humidity I had to treat my gear and clothing with alcohol to control mildew. Being in Brazil, we did not work the Sunday afternoon of the World Cup final, but instead went to a nearby bar with a small TV to watch the match. We sat on benches, drank terrible beer, and during lulls watched chickens scurrying about feeding on the dropped popcorn and chips from the futbol fans.

Despite the physical and biological challenges of sampling such streams, I would gladly repeat the experience because of the diversity of plant and animal life, the friendliness of the Brazilian people, the close camaraderie of the field crew, and the opportunity of experiencing a primary tropical rainforest. I was often awestruck as I found a new species of fish (to me) while giant blue morpho butterflies flitted above the water level and monkeys clambered high in the canopy overhead.



A local farm home.



Another camp resident.



Preparing to seine a sand-bottom stream.



A laundry and a beach.



New Frontiers
 in Fisheries Management & Ecology:
 Leading the Way in a Changing World



AFS 141st Annual Meeting
in Seattle on September 4 - 8, 2011
 Great Plenaries, Trade Show, Socials, Symposia, and Technical Sessions

*Bring the Family
 to Come Enjoy the
 Pacific Northwest*

- ✓ Tour Downtown Seattle & Pike Place Market
- ✓ See the Puget Sound on a Ferry Ride
- ✓ Catch Olympic & Mt. Rainier National Parks
- ✓ Visit the Rainforest
- ✓ Go Saltwater & Freshwater Fishing
- ✓ Take a Hike or Enjoy September Camping
- ✓ Party at Bumbershoot Music Festival
- ✓ There's a lot more www.VisitSeattle.org/Visitors



Courtesy: Pat Neelson, HTI



Courtesy: Patrick Moran, USGS



Courtesy: Linda Petre Moberly



"Shadow of the Salmon" by Wilby Pearce
 Courtesy: Steve Robinson



Courtesy: Tim Thompson

Contacts:

Program:	Craig Busack	Craig.Busack@noaa.gov
Local Arrangements:	Cleve Steward	Cleve.Steward@amec.com
	Larry Dominguez	LDominguez@entrixx.com
Sponsorship:	Eric Knudsen	EricKnudsen@gci.net



About the Tributary

The Tributary is the newsletter of the Western Division of the American Fisheries Society published four times per year.

Editor

Travis Neebling Travis.Neebling@wgf.state.wy.us

About the American Fisheries Society

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.

<http://www.fisheries.org>

About the Western Division of the American Fisheries Society

Established as the first Division of the [American Fisheries Society](#) in 1948, the Western Division now includes [Chapters](#) from twelve western states, British Columbia, Yukon Territories, and Mexico. Our members represent a tremendous array of fisheries workers involved in all aspects of the fisheries profession. The collective diversity and expertise of Western Division members is the basis of an intimate and unparalleled familiarity with fisheries resources and issues within our geographic region. Division 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.

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