



# Education Section of the American Fisheries Society

Volume 37, Issue 1

February 2016

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## PRESIDENT'S LINE

It's that "magical" time of year once again: January! A time to complete annual reports (ugh!), start a new semester, attend meetings, eat less, exercise more, and reflect on what was accomplished the previous year. Out my window here at SDSU in Brookings, SD, there is a fresh mantle of snow covering the ground following yesterday's blizzard conditions, the winds are light out of the north, and there's a little more daylight than there was yesterday. On my wall, Dave Willis is smiling at me from a picture taken at the end of a golden afternoon in 2012: a teal hunt that I will never forget. Memorable for the teal we shot, yes, but more so for the company of treasured friends.



Change seems to be the new normal. Everywhere around me, change is afoot, and most days, it's just plain hard to keep up. New University policies, new leadership, new organizational structures in agencies, new rules, and new challenges. Knowing that someone has my back and believes in me makes all the difference in how I approach my work as a 'researcher in the business of educating students.' That's how Dave described the job of a university professor. I knew that Dave believed in me and supported me, because he told me. He was an amazing mentor and leader. In the two years that have passed since his death, I've looked up at that picture on my wall countless times. I know that I stand on the shoulders of giants, and I am humbled and grateful for their encouragement and support. It's not the papers we publish, the awards we earn, or the titles that precede or follow our names that have the greatest impact on fisheries. Education has the greatest impact. The relationships we build with our students, colleagues, collaborators, clients, and stakeholders matter. I do my best

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## PRESIDENTS LINE (continued)

to honor Dave's memory by celebrating my students' accomplishments, keeping my door open to them whenever they need me, and letting them know as often as possible that I believe in them and support them.

Dave also found his professional society home in AFS, and he celebrated the important work of the Education Section. In the same way that I am supporting my students, my leadership as President of the Education Section will be aimed at supporting our membership and facilitating them in achieving a shared vision. Thank you to all of you who have served or continue to serve the Section on one of our committees or as one of our officers, and thank you to all of you who volunteered at the Annual Meeting to become more involved in new and ongoing initiatives. We have some new challenges ahead of us, but I am confident that the Section has the talent and drive in its membership to once again exceed expectations.

There will be two special issues of Fisheries this year that should be of special interest to our membership and also areas where we can contribute our knowledge and expertise to the Society at large. One will be centered on education, and one, climate change. On a recent conference call, the Executive Committee discussed ways to respond to these opportunities. We agreed to form two special ad hoc committees to brainstorm ideas and gather feedback from the membership. We are in the process of reaching out to folks who might have an interest in serving on these committees, and you might hear from one of us soon. If this grabs your attention though, don't wait for one of us to call. Please reach out to myself (Katie.bertrand@sdsstate.edu), or one of the other officers to let us know that you want to be involved. We envision that these committees will generate ideas that will spill over from the Fisheries special issues into broader visions of action for the Section.

Thank you again for being part of this great section, and please know that I am honored to be your President. Let me know how I can best serve you as we work together!

- Katie Bertrand

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## Biology and Culture of Percid Fishes

*P. Kestemont, K. Dabrowski, R.C. Summerfelt (Editors)*

Education Section member Robert Summerfelt (Charter Member and Past President of the Education Section, Professor Emeritus, Iowa State University) and Konrad Dabrowski (Professor, Ohio State University) have co-authored with Dr. Patrick Kestemont (Professor, University of Namur, Belgium) a 900 page book, **Biology and Culture of Percid Fishes: Principles and Practices**. In addition to updates on culture of European and North American Percids, among the 36 chapters are chapters on relevant biological aspects of taxonomy, distribution and evolution, environmental biology, ecology, reproductive physiology, feeding and nutrition, bioenergetics, genetics, immunology, stress physiology and behavior of Percid fishes. Details are provided on the Publisher's web site: <http://www.springer.com/us/book/9789401772266>.

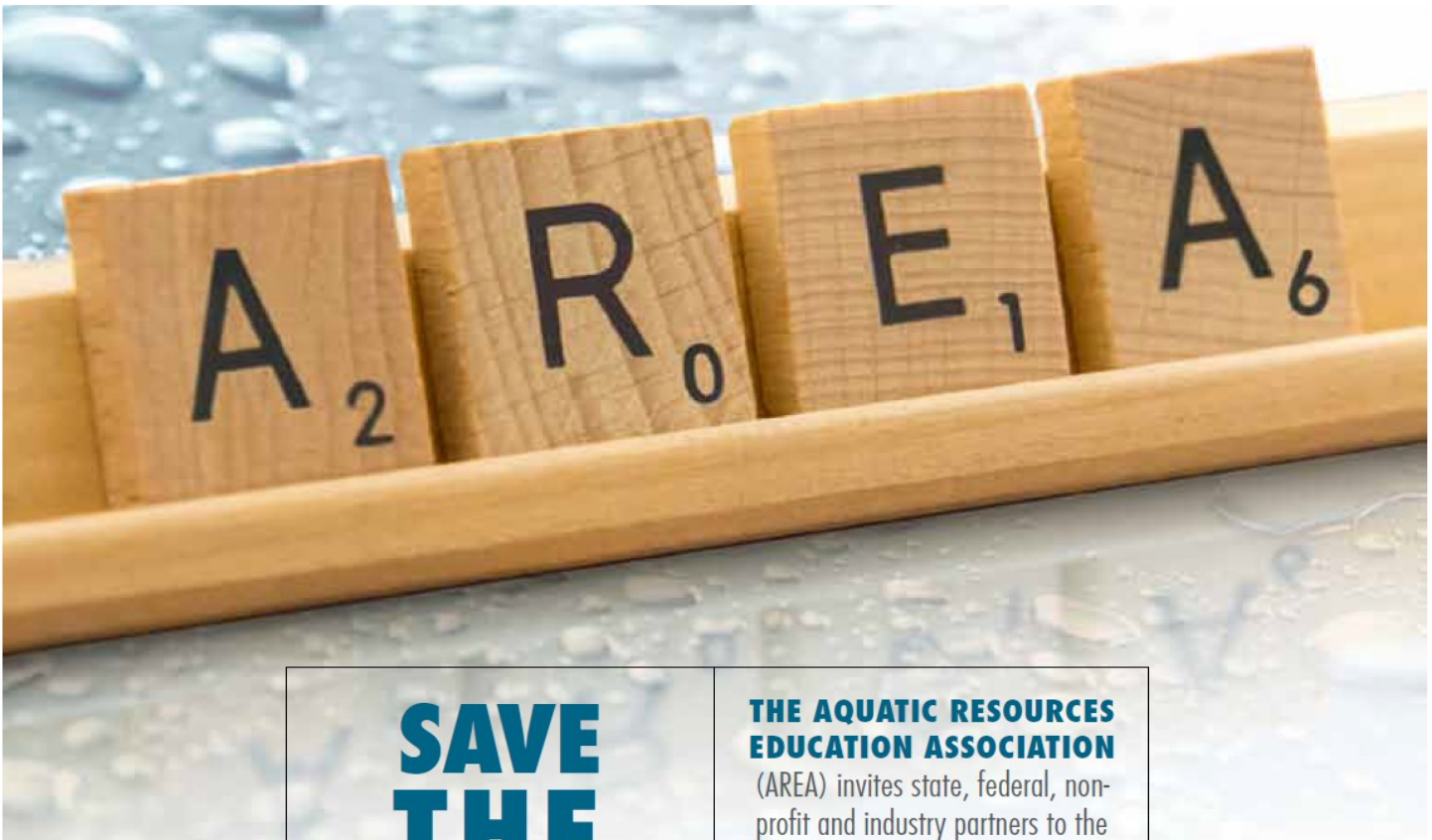
Price for hardcover copy is \$229 and \$179 for eBook. Paper copies of individual chapters are \$29.95

- Compiles all the latest scientific work on percid fish biology and aquaculture
- Details all biological aspects of the percid species
- Describes practical techniques for commercial production of this freshwater fish group
- Reviews the latest studies on percid fish biology

Both researchers of percid fish biology and aquaculture professionals who are considering intensive and pond culture of percid fishes will value this timely and comprehensive handbook.



“Reviews the latest studies on percid fish biology”



# SAVE THE DATE!

## THE AQUATIC RESOURCES EDUCATION ASSOCIATION

(AREA) invites state, federal, non-profit and industry partners to the 12th biennial conference!

## 2016 AREA CONFERENCE

**COLLABORATION:  
BETTER TOGETHER**

**OCTOBER 23-27**

Held at the USFWS National Conservation Training Center (NCTC) in Shepherdstown, WV. The 533-acre walking campus is about 80 miles from Washington, D.C.

Join us to collaborate about aquatic education research, best practices, stewardship and responsible use of aquatic resources, fisheries and habitats.

### PRECONFERENCE TRAINING: OCTOBER 23

Angler Recruitment, Retention and Reactivation (R3) with Matt Dunfee

Look for conference updates at <http://areanet.org>



## Fisheries Science in 140 characters: The Role of Social Media in Our Science

By: Sean Lucey

Social media is not a new phenomenon. Many organizations have embraced it as a way of communicating with new audiences, making connections, and building partnerships. But what impact does it have on science, particularly fisheries science? In many ways, social media has transformed the way we disseminate our science, making it more transparent and open. Social media allows for a rapid exchange of information, but lacks the rigors of peer review which may lead to mis-categorization of information. When used efficiently, it can be a powerful tool for engaging stakeholders. It can also be a dangerous tool, as highlighted by the recent debate over the ethical ramifications of live-tweeting at conferences. This symposium will explore several aspects of utilizing social media within fisheries science. Topics will include communicating science to lay audiences, the role of social media in the publishing arena, using social media to verify (or deny) rare fishery events and enforcement, and understanding the impact of your digital footprint.



If you are interested in participating, please contact Sean directly:

Sean M. Lucey (sean.lucey@noaa.gov)

US Dept. of Commerce/NOAA/NMFS

166 Water Street, Woods Hole, MA 02543

508-495-2011

### New Fisheries Blog Series!

By: Natalie Sopinka



Members of the Education section may be interested in knowing about a blog series hosted by Canadian Science Publishing. Contributors to the [science communication symposium](#) at the 2015 AFS annual meeting in Portland have written blog posts for the series ["Making Waves: The future of #scicomm in fisheries sciences."](#) Some of the blog posts will be re-published in upcoming issues of *Fisheries*. Section members are encouraged to join the discussion of science communication in fisheries science on Twitter with the hashtag #MakingWaves. If Section members would like to share their thoughts on the future of science communication in fisheries science through the blog platform they are welcome to comment directly on published blog posts, or can contribute to the series by getting in touch with myself ([natsopinka@gmail.com](mailto:natsopinka@gmail.com)) or Rebecca Ross ([rebecca.ross@cdnsiencepub.com](mailto:rebecca.ross@cdnsiencepub.com)).



## College Classroom Experiments with Fish

By: Dr. Frank Rahel

I teach an upper division ichthyology/fish ecology course and want to add some lab experiments involving fish. I was wondering what experiments others might be doing in the laboratory portions of their fish biology classes. We do the usual fish anatomy and taxonomy lab exercises – but I was looking for things to do with live fish that would allow students to observe fish behavior/physiology firsthand. Ideally, the experiments would involve gathering data to test hypotheses and thus be amenable to lab report write-ups. I would appreciate any ideas you might have. Thanks.

Frank Rahel, Dept. of Zoology & Physiology, University of Wyoming ([frahel@uwyo.edu](mailto:frahel@uwyo.edu)).

### Cooperative Fisheries Research in Marine and Freshwater Systems: From Policy to Practice

Cooperative research between scientists and stakeholders is a time-tested model that has gained additional traction through formalized policy by fishery agencies and the emerging trend of citizen science initiatives. The benefits are many. Stakeholder-scientist networks have the capacity to leverage limited funds and produce information that surpasses independent academic efforts. Stakeholders typically have innate and historical knowledge of resource availability and environmental patterns, as well as readily available infrastructure and a "boots on the ground" capacity to mobilize research or monitoring programs. Inclusion of stakeholders in the data collection process encourages trust in the regulatory and management process. Cooperative research encompasses a huge spectrum of possibilities across marine and freshwater fisheries. Although marine and freshwater systems are fundamentally different, there are also commonalities, and as initiatives shift from traditional "pay-for-hire" models to true transdisciplinary science, there is great potential for these groups to learn from each other. This symposium invites speakers to discuss these issues through reviews of established case studies or emerging cooperative fishery research approaches from either marine or freshwater ecosystems. The goals for this symposium include i.) to highlight cooperative fisheries research in marine and freshwater systems, ii.) to provide examples where administrative policies have promoted the scope of cooperative research, or where the research itself has influenced management policy, and iii.) to create a forum to discuss lessons learned – what works (and why)?

**Contacts:** Angela Collins (Florida Sea Grant, [abcollins@ufl.edu](mailto:abcollins@ufl.edu)), Dave Herzog (Missouri Dept. Cons., [Dave.Herzog@mdc.mo.gov](mailto:Dave.Herzog@mdc.mo.gov)), Richard S. McBride (NOAA Fisheries, [richard.mcbride@noaa.gov](mailto:richard.mcbride@noaa.gov)), Quinton Phelps (Missouri Dept. Cons., [Quinton.Phelps@mdc.mo.gov](mailto:Quinton.Phelps@mdc.mo.gov)), Nick Trippel (Florida Fish & Wildlife Res. Inst., [Nick.Trippel@myfwc.com](mailto:Nick.Trippel@myfwc.com))



## Business Meeting Minutes

### Minutes of the Annual Business Meeting—Education Section

2015 Annual Meeting of the American Fisheries Society

Portland, Oregon; Aug 17, 5-7 pm, Convention Centre 2015

#### Call to Order:

Craig Paukert called the meeting to order at 5:07 p.m. Paukert pointed out that a few copies of the agenda, treasurer's report, and funding requests were available to attendees along the side of the meeting room.

**Introduction of Guests:** The current officers of the Education Section introduced themselves, which included Craig Paukert as President, Katie Bertrand as President-Elect, Mike Quist as Past President, and Trent Sutton as Secretary-Treasurer. Paukert recognized the Past-Presidents of the Education Section in attendance by asking them to stand.

**Comments by AFS Officer:** Donna Parrish, current AFS President, gave the opening remarks. Parrish stated that the AFS is working on a strategic communication plan and wants a lot of feedback from the AFS membership. Parrish also stated that the AFS Governing Board passed a motion to create a development program to create new streams of revenue for the society.



**Determination of a Quorum:** A quorum (10% of membership) was present and confirmed by Sutton (> 50 members were in attendance).

**Approval of Agenda:** Paukert introduced the agenda, which was approved with no changes (agenda was approved unanimously).

**Approval of Minutes from 2014 Business Meeting:** The minutes were available to the membership on the Section webpage and in the Section Newsletter. Minutes were approved with no changes (minutes were approved unanimously).

**President's Comments:** Paukert noted that there will be a special issue of Fisheries that details survey results on whether universities teach what agencies need. Paukert stated that additional education-related articles are need-

## Education Section Business Meeting Minutes (continued)

ed to round out this special issue.

**Treasurer's Report:** Sutton presented the Treasurer's report. Total assets of the Section as of August 14, 2015 were \$185,543.46. The balance forward from August 13, 2014 was \$61,557.71, income from the previous year was \$34,058.75, and expenses were \$37,047.57. Sutton explained that almost all of the revenues were from book sales (\$32,226.28), with the majority of that income coming from the sales of Fisheries Techniques, Third Edition (\$26,208.40). The remainder of the book revenues came from Inland Fisheries Management in North American, Second and Third Editions (\$5,222.75), Analysis and Interpretation of Freshwater Fisheries Data (\$526.33), and Methods for Fish Biology (\$268.80). There was discussion surrounding the concern that book revenues are declining and that the Section needs to find new sources of revenue.

### **Committee Reports:**

**Newsletter:** David Schumann gave the report and noted that he has been working on the newsletter with Hilary Meyer for the past two years. It has been challenging to get articles for the newsletters, so have been soliciting more directed articles (special topics articles). Schumann stated that they are open to any ideas for newsletter topics, so please contact either Hilary or him.

**Web Page:** Paukert reported for Steve Ranney. Ranney is still willing to maintain the web page, but is willing to give up that responsibility if there is interest from someone else. Overall, the website maintenance is going well.

**Excellence in Fisheries Education Award:** Greg Whitledge thanked the committee members for their service, and stated that he is looking for a committee representative from the Western Division. Whitledge noted that it is not too early to be looking for potential award nominees for next year or future years. There were five nominees for the award this year, and this year's recipient was Dr. Bill Kelso from Louisiana State University. Whitledge noted the credentials of Dr. Kelso and his accomplishments as an educator. Kelso was in attendance and stated how much he enjoys teaching and how great it is to be acknowledged for this award.

**Skinner Award:** Julie Harris was in attendance and acknowledged the judges for this past year. There were 63 applicants for the Skinner Award from 40 universities this past year. There were 10 award winners and 4 honorable mentions. The 10 winners were as follows: Carlos Camacho, Iowa State University; Zachary Feiner, Purdue University; Tomas Ivasauskas, North Carolina State University; Hanna Kruckman, Eastern Illinois University; Dominique Lujan, New Mexico State University; John Mohan, University of Texas at Austin; Christina Murphy, Oregon State University; Elizabeth Ng, University of Idaho; Vivian Nguyen, Carleton University; Anthony Porreca, Southern Illinois University Carbondale. Honorable mentions went to the following 4 individuals: Jared Flowers, North Carolina State University; Kevin Fraley, University of Alaska Fairbanks; Vanessa Minke Martin, University of British Columbia; Julie Christine Schroeter, Southern Illinois University.





## Education Section Business Meeting Minutes (continued)

**Best Student Paper-Poster 2015 Symposia:** Mark Fincel was in attendance and stated that they had 65+ applicants for this year's symposium. The Division Representatives reviewed the abstracts for the application packets that were complete, and there will be 20 oral presentations and 2 posters at this AFS meeting as part of the symposium. In addition, there was a large number of individuals volunteer to serve as judges for the symposium. Melissa Wuellner brought up the issue with the recurrent problem associated with the large number of incomplete application packets. Bertrand also mentioned that there was a very small number of poster applications. Some students in attendance at the Business Meeting stated that one of the problems was that not all of the details on what was needed (i.e., extended abstracts) were clear. Jason Vokoun and Amanda Rosenberger stated there may be a need to have a later deadline date for the posters. Wuellner mentioned that there could be a problem with having separate oral presentation and poster deadlines because of deadlines associated with the development of the program for the meeting. Jesse Fischer stated that oral presentation judging is different from poster judging, so perhaps not having an extended abstract for the poster session would increase the number of submissions (only 2 out of 400+ student posters at this year's AFS meeting are in the best student poster session). Bertrand questioned that if this change is warranted, should the award amount be the same between the best paper and best poster awards? Fischer indicated discomfort in having a competition for only 2 posters. One Business Meeting participant suggested the idea of having students that are not in the top 20 for oral presentations to give a poster in order to increase the number of posters in the symposium. It was recommended that the committee discuss this issue and come up with a solution(s).



**Membership and Young Professional:** Rebecca Krogman was in attendance and discussed the Young Professional Award. There were 22 applicants, which was more than 3 times the number of applicants the previous year. Rebecca acknowledged the award committee and named the recipient for this year: Quinton Phelps. Phelps thanked Krogman for the award. Krogman encouraged young professionals to apply for next year and noted that it would be great to give out several of these awards each year. In addition, Krogman stated that she has been serving as a liaison with the Fisheries Management Section. As part of that initiative, she is working to make sure that young professionals can make it to the annual AFS meeting. Krogman asked "What is the direction that the Section would like to see this award go in the future?" Fincel pointed out the need to increase the number of awards because young professionals are often financially limited. Tom Kwak thought that we should consider giving out an additional award based on need given that the Section has sufficient funds. A third award could be a diversity award to get young professionals involved in the section/society. Vokoun stated that it might be worth looking into advertising for this award with other societies in an attempt to attract students from elsewhere. Christine Moffitt agreed with this approach to attract students with an interdisciplinary focus. Rosenberger stated that it would be good to provide funds for student subsection/club officers to come to the meeting. Krogman also stated that there is a need for a member from the Education Section for the Online Services Committee; she looking for a volunteer to serve on the committee (Wuellner agreed to serve on the committee for a two-year term).

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## Education Section Business Meeting Minutes (continued)

**Nominating:** Quist deferred the Nominating Committee report to the Awards/Election Results section.

### **Ad-hoc Committees, Special Projects, and Student Subsection:**

**Student Subsection:** Andrew Carlson was in attendance and stated that the student subsection has had a very active year. Carlson noted that the Subsection formulated a “how to” series – how to conduct undergraduate research, apply for a job, etc. This series was posted on the section website and a summary article about the series was published in Fisheries in May 2015. There was discussion at the Governing Board on how to recruit students into the society and better educate them. As a result, communication has been a focal area and, the Subsection has increased its social media presence via Facebook. The Subsection has put a lot of energy into the website and created a subsection brochure, which includes the Subsection mission, objectives, and activities. The Undergraduate Travel Award has been a major emphasis to help recruit students to AFS. Carlson closed the report by letting everyone know that the Student Subsection meeting will be held on Tuesday from 2-3 pm in the Oregon Convention Center.

**Undergraduate Travel Award:** Carlson noted that there has been 17 awardees since the inception of this award, with 4 students awarded this year. The 2015 awardees included Dominique Lujan, Katie Rohwer, Cat de Vlaming, and Rennie Winkelman. Carlson stated that it is clear that this award is effective for getting undergraduates to the annual AFS meeting and recruiting them into the society. An ad hoc committee was created to evaluate the importance of this award and its sustainability. The purpose of the award is to promote and fund undergraduate travel. However, Carlson stated that \$500 is not enough to cover full meeting costs for student travelers. Regardless, students are being attracted to the society and are getting involved in AFS activities. Sustainable funding is needed (at the moment, funding is only committed through 2017 and, as stated previously, \$500 per student is not enough). The committee came up with a cost-share idea where each of the AFS Divisions and the Canadian Aquatic Resources Section would fund \$500 each; so far, only 2 Divisions were interested in participating in this program. One suggestion was to allow the student recipients to choose another meeting that is closer to their home location which is less expensive, which might prompt the home Division to take some responsibility and cover costs for their student(s). Vokoun supported that idea, which would be in effect a regionalization of the award. Another idea was that of a Chapter challenge, where the State Chapter for the student would be required to cover the costs for the student travel to the next level and on up through the AFS hierarchy.

**Incredible Skinner Challenge-Take 2:** Paukert discussed the Skinner Challenge, which was started when Tom Kwak was Education Section President. Through this challenge during 2014-2015, the Section contributed \$25,000 and agreed to match any other Section/Chapter contributions. To date, \$500 has been committed from the Virginia chapter and an additional \$980 in contributions came in that the Section will match (there were approximately \$13,000 in contributions during the first Skinner Challenge). The current balance in the Skinner Award fund is around \$314,000. Over the past 4 months, the fund has gained approximately \$15,000 in earnings. As a result, the Skinner Award fund has sufficient funds and is sus-



## Education Section Business Meeting Minutes (continued)

tainable. The challenge will continue until September 01, 2015. It was recommended by a member in attendance that the Chapters would contribute if directly challenged; as a result, Quist stated the need to directly contact the Chapters/Divisions. Fischer recommended extending the deadline if the states wanted to contribute; Paukert agreed to extend the deadline to June 01, 2016.

### **Funding Requests:**

Hutton Program: Beverly Pike was in attendance and introduced the new educational program coordinator (Cynthia Obo). In the past, the annual cost for a Hutton Award was \$5,000, with \$3,000 for the student stipend and \$2,000 for AFS administration costs. This amount and distribution has held constant for the past 15 years. It has been approved to increase the annual scholarship amount to \$4,000 per student and the administration costs to \$2,680; as a result, the total request to the Education Section is \$6,680. (more per student). Moffitt supported this need and the need to fund more students – in short, the program needs more funding. Kwak stated that the \$4,000 per student is light; he is covering \$6,000 per student in an undergraduate research program. The motion passed unanimously.

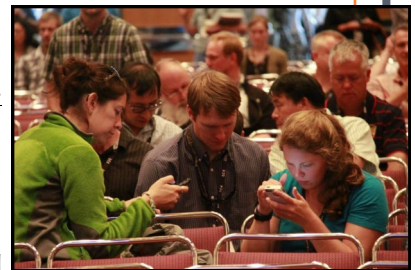
Equal Opportunities Section (EOS) Student Travel: Marybeth Brey, President of the Equal Opportunities Section, was in attendance. Brey has solicited all Sections and Chapters for support for travel awards. In the past, the EOS has given 10 travel awards annually; however, this year the EOS could only give out 4 awards. The EOS is asking for \$5,000 to support more student travel awards and to cover the costs of a luncheon. A motion was proposed by Jeff Jolley and seconded by Brian Murphy. The motion passed unanimously. Brey concluded by noting that the EOS meeting would be held on Wednesday.

### International Congress on the Biology of Fish, Undergraduate Research Symposium:

Paukert presented for Chris Myrick. Myrick is requesting \$5,000 for undergraduate students wishing to travel to and present at the 12th International Congress on the Biology of Fish (June 12th – June 16th, 2016). The funds would be used to cover travel costs for up to 10 undergraduate students presenting at this meeting. If there are not 10 suitable undergraduate students, then the remainder of the funds would go to cover graduate student travel to this meeting. Murphy asked if the Education Section was the only section being asked for these funds. Moffitt thought that we needed additional information to answer that question. Murphy motioned to support the request contingent on the student attendees becoming members of AFS if not. The motion was seconded by Finsel and passed unanimously.

### Other Awards and Recognition:

Out-going Division Representatives and Officers: Paukert acknowledged Brian Irwin (Southern Division Representative) and Phaedra Budy (Western Division Representative) for their service as Division Representatives. Neither was in attendance, and their plaque would be sent to them via mail. Paukert also acknowledged Sutton for serving as Secretary-Treasurer. He was in attendance, received his plaque from Paukert with a hearty handshake.



## Education Section Business Meeting Minutes (continued)

### **Election of new Division Representatives, Secretary-Treasurer, and President Elect**

Southern Division Rep: Quist announced the election results: Mike Colvin (Southern Division Representative), Jeff Falke (Western Division Representative), Tyler Wagner (Secretary-Treasurer), and Mark Fincel (President-Elect).

### **Old Business:**

Scott Bonar announced the International Standard Symposium via the Fisheries Management and International sections will be held during Wednesday and Thursday, and will be followed by a discussion panel that will be presented in a report by the Fisheries Management Section.

### **New Business and Announcements:**

Bertrand thanked Paukert for his service and presented him with the Past President's Award plaque

Bertrand's opening remarks were that there is a lot of change in fisheries and higher education currently, especially as it relates to students. She has planned a lot of activities and will solicit the membership to help with that effort.

Moffitt noted that there will be a short session on underrepresented minorities in fisheries on Tuesday from 10:30 a.m. to 12 p.m.). This will be a highly participatory/interactive session in which the presenters will give their personal stories.

### **Adjournment:**

Mark Fincel motioned to adjourn at 6:45 p.m. Mike Holden seconded the motion; motion carried, meeting adjourned.



## Student Subsection News



By: Ross Boucek

President, Student Subsection of the Education Section

The student sub-section has been working on three projects over the last 6 months. First, Rebecca Krogman and others have finished re-designing the student website. The site now regularly updates with current AFS student activities and accomplishments. Please check the site regularly for the latest AFS student projects. We are also continuing to roll out our “How To”, documents. These publications are brief write ups that provide advice on how to confront common challenges experienced by students and young professionals. There are 17 published “How To” documents on our student site, that cover topics of how to apply for graduate school, how to write a peer reviewed publication, and how to apply for jobs once you graduate. Last, our student sub-unit is continuing the publication of the “Student Angle” in Fisheries magazine, we have two submissions in press and two more in review. Please check the next issue of Fisheries for excited research being conducted by AFS students.

# Student Subsection Business Meeting Minutes

August 18, 2015

- I. The meeting was called to order at 2:02pm
- II. Carlson introduced guests in attendance:
  - a. Craig Paukert (Past President of Education section)
  - b. Jesse Trushenski (2nd Vice President elect)
  - c. Ron Essig (President elect)
  - d. Steve McMullin (2nd Vice President)
- III. A quorum (> 15 members) was determined to be present (n= 21).
- IV. Motion was made to approve minutes of 2014 annual business meeting. Motion seconded. No comments on the minutes. Motion passes with unanimous consent.
- V. Education Section Report (Craig Paukert): reported on Education initiatives in AFS and spoke about an education survey that is being completed within AFS to determine if universities are teaching what employers are looking for. Craig has a long history with the Education Section and the Student Subsection and spoke about the importance of getting involved in the Student Subsection.
- VI. Jesse Trushenski provided an update regarding the Governing Board meeting.
  - a. Background: The Governing Board represents all the units of AFS. It is a large body so divided labor between Governing Board and Management Committee. The Management Committee deals with finance and day to day operations, which frees up the Governing Board to deal with broader issues with AFS. This division of labour became formal at the last Governing Board meeting and the Governing Board now has the freedom and time to deal with other bigger initiatives like communication.
  - b. Communication initiatives: AFS is rolling out a new plan to better communicate within and outside of AFS.
  - c. Young Professional membership change: The Young Professionals membership category has been changed to extend the time period for intermediate registration fees from 3 years to 5 years.
  - d. Social media interactions & Students: Other sections want to do a better job of interacting with social media and students. They were suggested to get in touch with the Student Subunit, and likely will.

## Student Subsection Business Meeting Minutes (cont'd)

VII. Andrew Carlson provided President's comments:

a. Recruitment & retention, education, communication: We have done a good job of addressing these objectives. Extended thanks and appreciation for the How To series: The first major movement was very effective and the Student Subsection was able to put together 9 different aspects of How Tos. There is more room for growth but we are moving in the right direction. Question: has the How To series been featured in the e-newsletter in the membership? Answer: It was mentioned as a bullet point but the biggest communication about the How To series was the Fisheries article. Comment: Fish culture section will link to it from their website. Perhaps other sections can do the same.

b. Midyear Governing Board meeting: Andrew could not attend due to weather but did attend virtually and provided developments that were on going at the time.

Andrew expressed interest in having a continuing presence of the Student Subsection at the Governing Board meetings. The Student representative can speak but cannot vote. There was discussion about the possibility of becoming a voting member. Comment: This was voted down in the past because of the possibility of other units creating subunits to increase their presence on the Governing Board. The financial sustainability of sending Student representation to the Governing Board meetings was discussed. The Excom of the Student Subsection approved expenditure of funds to support Andrew's travel to the Governing Board meeting in 2015 but that is not a sustainable source of funds for that travel. The Education Section also supported Andrew's travel to the Governing Board meeting. The Education Section has indicated they will continue to fund student representation at the Governing Board meetings and they have the ability to cover costs like this on occasion. However, the Education Section is getting more selective with funding requests. Comment: By the end of the year AFS will hire a Development Coordinator. This person may be available to help units do fundraising. As the development program develops, that might be a way to source some funds. Comment: Western Division is planning to have a photo contest to raise funds by selecting the best 3 out of submitted entries and raffling them off at the Division meeting. Comment: the Idaho Chapter has a book "the unwritten laws of fisheries". Perhaps subsection can engage in the process of raising funds through that book. Comment: perhaps there could be a drop down list to donate to student subsection in the AFS website.

c. Annual meeting student events: student/mentor lunch was held and was beneficial. There is a student reception.



## Student Subsection Business Meeting Minutes (cont'd)

d. Undergrad travel assistance award recognized three awardees in attendance:

i. Katie Rohwer, Dominique Lujan, Cat de Vlaming

e. Student angle: Two subsection publications were completed this year: one on How Tos, one on the history and importance of Student Angle in Fisheries. It is a powerful voice. Andrew encouraged other student to come up with ideas for the student angle and get it published in Fisheries.

f. Financial Report: No change to the bank account balance in the past year. The balance remains at \$2546.44. There is a \$70 check to be deposited shortly from membership fees. This could not be completed from Canada.

VIII. Division Representative Reports:

a. Nick Cole: Not present

b. Tracy Wendt: Not present

c. Clint Lloyd: Southern division meeting 700 attendees. NC state university subunit won best chapter. Believe they won National best chapter report. Had little interaction with subunits and will be addressing this over the next year.

d. Vivian Nguyen: CARS has been featuring student research on blog site. CCFR was in Ottawa this year so there was involvement in that conference and with the Ontario chapter.

e. Kyle Wilson: Communication is difficult from Calgary. There are two strong chapters in Canada: Ontario and British Columbia. Will pass on a contact to the next CARS rep to increase involvement in central Canada. There are opportunities to recruit from mid-Canada, Northern Canada, and the Maritimes to increase involvement in AFS.

IX. Officer elections: Election via survey monkey. 30-35 respondents. In future is one area to improve on to increase active involvement in membership.

a. North Central: Nick Sievert

b. Southern: Chelsey Crandall

c. Western: Tracey Wendt

d. Northeastern: Shannon White

e. CARS: Mike Lawrence

f. Secretary/Treasurer: Nathan Lederman

g. President elect: Clint Lloyd





## Student Subsection Business Meeting Minutes (cont'd)

X. Incoming President remarks: Ross Boucek wants to improve connectivity among us. He wants to use the student angle more effectively and especially for undergrads to get publication early on. He is planning to actively recruit undergrads to write for the student angle. He plans to continue to work on the How To documents.

XI. New business:

a. UTAA

i. Undergrad travel award recipients. Carlson sends congratulations to the recipients and thanks to the selection committee.

ii. Mentorship program: Provided opportunity to have lunch with UTAA recipients and a mentor from the Student Subsection Excom. This was successful and allowed discussions about the subsection and how to get involved in AFS.

iii. Ad hoc committee summary: Carlson summarizes: This was initiated at last year's Education Section business meeting in response to concern about whether the UTAA overlapped with the Skinner award, how to fund the UTAA sustainably, and if it should be merit based. The Ad Hoc committee consisted of 5 members. Decided that it was fundamentally a travel award. Looked at historical records to see if it has been effective and it has been. Overall committee agreed that the award was effective so should continue. The committee posed an idea for cost sharing: have each division select a deserving student to receive the award. The division will provide \$500 and that would be matched with Student Subsection funds at \$500 each. Discussion that this idea should be further developed. There was discussion about regionalization of the award: select students that are in the area where the meeting will take place. Discussion about cost sharing and regionalization of the award: Suggestion that we challenge the unit conferences to fund the winners of the best presentation awards to attend the next conference level (i.e., from chapter to division), and continue this so that the winners of the division level are then funded to attend the society level conference. Suggestion to allow undergraduate winners present posters without extended abstract (best student poster award). Suggestion: have a graduate student mentor the undergraduate student in how to write an extended abstract, how to make a poster, how to get involved in AFS at the meeting, etc. Comment: Pursuing cost sharing is a good idea and perhaps need formal agreements from Divisions.

Comment: Regionalization of UTAA awards may result in missed opportunities to recruit. Suggestion of finding opportunities to get cost sharing from universities by putting it on the appli-

## Student Subsection Business Meeting Minutes (cont'd)

cation as a check box. There was a suggestion for the potential of having someone in student subsection Excom facilitate that process.

b. Communication:

i. Social media: Acknowledges Shannon's efforts to enhance the presence of the Student Subsection on Facebook. Acknowledges Rebecca's efforts to convert the Student Subsection website to the AFS format, and to update content. Rebecca has been working with AFS as a whole to reformat website and suggests a future discussion to decide if the Student Subsection wants to have AFS branding or to have its own look. Rebecca would be happy for someone else to manage the website. Please contact her if you are interested.

c. Recruitment and retention:

i. UTAA will continue, dependent on funding.

ii. Subsection brochure: A brochure was created with information on objectives, how to get involved, benefits. It is posted on website. People are encouraged to distribute it. Discussion if the Student Subsection represented Young Professionals. There was a suggestion for a name change to more accurately reflect the people included in the Subsection. Discussion that the term "young" is not reflective of some of the recent graduates. There was a suggestion to use Early Career Professionals instead. Motion to change the name to Student and Early Career Professional Subsection of the education section. Seconded. Discussion that a name change has to occur through the bylaws. Motion withdrawn. Motion to change the name to be more inclusive of early career professionals and inline with the bylaws. Second. Discussion that the Excom will make progress on this. Motion passes unanimously.

d. Recognition provided to outgoing officers.

e. Other new business:

i. Trushenski provides summary of Governing Board meeting: The Governing Board discussed a special committee on education that has surveyed educational requirements to determine if educational requirements were being met from employers. There will be a special issue of Fisheries designated to the topic focused on the question: "Are we preparing the next generation of professionals?" Input from students and early career professionals is welcomed. The timeline is to be writing the pieces in next several months and have the issue out in the spring.

ii. Trushenski suggested that students and early career professionals attend the Leading at All Levels course.

f. Motion to adjourn. Seconded. Meeting ended at 5:05pm.

## Undergraduate Travel Award Winners

Submitted by: Cat de Vlaming

Overall I would consider my trip to the National American Fisheries Society meeting in Portland a great success. My initial purpose for attending was mainly to network in the hope of finding a future employer and to learn about the different types of research, including marine, which I am not exposed to as a student attending school in Colorado. However, as I would very much like to attend graduate school to pursue a master's degree in the fisheries field most of my networking consisted of discussing graduate school. While not my original plan, I feel I learned a lot about what I need to do in the near future to successfully pursue this goal. I went from being very unsure about graduate school including the whole process of getting there to being very confident in what steps I will take. Because I was volunteering I did not get to see as many talks as I would have liked, but I did get to attend some that really stuck out to me including one called, "What tools every future fisheries professional needs in their toolbox." I truly learned a lot while I was there.

Without the UTAA I would not have been able to attend the national meeting despite wanting to go. Because I was able to go I believe this will help me to express to future employers and advisors how devoted I am to being as good a fisheries professional as I can be. This award will also help me to get in to and succeed in graduate school considering all of the incredible advice I received while in Portland. I would like to again thank the Education Section of the American Fisheries Society for allowing me this great opportunity. It was and will be used to help me in my future career endeavors.

Undergraduate travel award recipients receive monetary support from the Student Sub-Section to fund their travel to the National AFS meeting.



## Undergraduate Travel Award Experience

Submitted by: Dominique Lujan

Attending the 2015 AFS Annual Meeting in Portland, Oregon was an amazing experience. An experience I would not have been able to have if it wasn't for the help that the UTAA travel award. I started my degree in Wildlife Science at New Mexico State University thinking I wanted to study ungulates. During my freshman year I was fortunate enough to get a lab/field tech position with Dr. Colleen Caldwell. Throughout my years working for her I found my passion for fisheries. Attending this meeting was a huge milestone for me in my quest for a career in fisheries science. I have been working on a long term study looking at post wildfire effects on stream systems in North Central New Mexico for the past four years. In February 2015 I was fortunate enough to present that research at the AZ/NM TWS and AFS Joint Annual Meeting in Las Cruces, NM. The first time presenting at a meeting like that was nerve wracking and very exciting. Following that presentation it became my goal to attend the AFS Annual Meeting in Portland. I not only wanted to attend the meeting but also present there. When this became one of my goals I began applying for travel grants. With the help of the Undergraduate Travel Assistance Award, the John E. Skinner Memorial Award and the Western Division of AFS Student Travel Grant, I was able to accomplish my goal and attend the AFS Annual Meeting as a participant in the Student Best Paper Symposium.

It was exciting to be able to attend and experience an annual AFS meeting. There were a lot more attendees than I thought. It was a big meeting! I enjoyed being able to attend the business meetings and hear about various great ideas that I hope happen. I think the best part of meetings like this one is getting to network, meet people, and learn about all the different jobs that they do in many different places. It is also great to be able to attend the talks that go on and learn about the research and management that is being done. I am very thankful to have gone to Portland and met a lot of new people. It makes me excited and eager to get more involved in the fisheries community. This was the first AFS annual meeting I attended but I hope it will not be my last.

## Women in Science Career Day

Submitted by: Hilary Meyer

South Dakota Department of Game Fish and Parks (GFP) wildlife biologist Casey Heimerl and fisheries biologist Hilary Meyer traveled to Yankton, SD to participate in a Women in Science Career Day. On Tuesday, October 6th 2015, Casey and Hilary interacted with around 200 8th grade girls that attended the event at Mount Marty College. The Women in Science event is designed to help get young women excited about careers in the sciences. Casey brought along a set of mist nets to catch migratory song birds to band, as well as a few back-up pigeons for the girls to handle in case the wild birds didn't cooperate. Casey explained how one duty of her job as a non-game wildlife biologist is banding birds to contribute to large-scale research. "By recapturing banded birds we can learn a ton of information, such as how long they live, what routes they take during migration, or where they are breeding or wintering."



Hilary received help from the GFP fisheries crew based in Yankton, as well as from the USFWS Gavin's Point National Fish Hatchery. The hatchery supplied the well water, and the Yankton crew deployed fyke-nets the day before to catch fish for the display. Hilary discussed what it means to be a fisheries biologist, and work in fisheries management. "In a nutshell, my job is to make fishing better for fishermen and fisherwomen in South Dakota," she explained to each group of 8th grade girls. "I'm part of a team that goes out to different lakes and rivers in South Dakota. We set nets and do surveys on these lakes to find out what kind of fish are in there, how big those fish are, and what we might need to do to make the lake healthier." The girls had a chance to see and touch a number of different fish found in the Missouri River and learn about how they adapt to life in such a big, muddy and fast flowing river.



## 2015 Young Professional Travel Award Recipient

I would like to start this thank you letter with a HUGE “Thank You” to the Education Section! Attending the AFS Portland meeting was great for me in terms of both personal and professional development. I am honored to receive this award knowing the caliber of young professionals that apply for this award. As we all know, these meetings are a great time to learn about cutting edge research, build new collaborations, mentor students, and catch up with scientists that you haven’t seen recently- AFS Portland followed suit! Given all of these attributes, below is my tribute to Portland AFS. Just as a precursor: The AFS meeting in Portland was an amazing 7 days.



I kicked off the meeting on Saturday by attending the workshop Bayesian I: Introduction to Bayesian Inference Using Gibbs Sampling (BUGS) for Fish Biologists workshop. Dan Rawding did a great job relaying the information that was previously way too far out of my comfort zone. I am still in the process of getting “up to speed” with Bayesian analyses; however, this workshop provided me the background needed to use this approach in the future. Sunday was eventful as well given my role as the secretary-treasurer of the Fisheries Management Section (FMS), I spent most of the morning with the other members of the FMS executive committee rehashing our plans for the afternoon meeting. The FMS meeting was great, we were able to discuss FMS projects and listen to several great presentations (including one from the Institute of Fisheries Management).

At the conclusion of the FMS meeting, I attended the Education Section meeting with all of the students from our field station. During the meeting, I was honored with the Young Professional award which was a truly humbling experience. As I stated above, I am truly thankful for the award. Monday was the beginning of the symposium “Frontiers in Otolith Chemistry: Insights, Advances and Future Directions”. I have been involved in using microchemistry as a fisheries management tool since graduate school, so attending and presenting in this symposium was certainly a boost for me! It’s certainly amazing how this approach has developed so drastically over the last few years. The research that I presented during the symposium was entitled “Shovelnose Sturgeon recruitment sources and inter-river movement of Shovelnose and Lake Sturgeons in pools 20-26 of the Upper Mississippi River: implications for sturgeon conservation”. The resultant paper is now under review in a special symposium issue of journal of fish biology.

The next few days of the meeting were filled with attending various symposia and being there for the students (Seth Love, John Buszkiewicz, Nicholas Kramer, Chris Schwinghamer, Michael Wolf) in our lab that were presenting. For most of the students, this was their first experience attending the American Fisheries Society conference. Getting to watch all of the students present their research on various big river and reservoir related topics was certainly the highlight of the meeting for me. It was also great to see previous students (Ryan Hupfeld and Kyle Bales) present the new research they are carrying out with their new employers. The current students are certainly excited about attending future annual meetings now. I am certain the current students will follow the path of the previous students and continue to attend the future meetings and become more involved in AFS.

My biggest “take away” message from the meeting was the new impetus that AFS and the membership are taking to promote young professionals and students in this wonderful fisheries profession! We are truly lucky to get to do what we do! I would like to end by again thanking the Education Section for honoring me with this award and also extend an invitation to all to attend the Kansas City AFS meeting. Kansas City will be a wonderful time! Please get your abstracts in soon!

Thanks.            -Quinton Phelps

# A Case Study of Adaptive Management

The results of a semester long project from an adaptive management course at the University of Connecticut was recently published in the journal: *Natural Sciences Education*.

This paper came out of a graduate seminar that the authors participated in on adaptive management, in which they read seminal papers on the management approach. Dr. Jason Vokoun initially recognized a gap in graduate education regarding adaptive management, which needed to be addressed considering the prevalence of this approach to management in the profession. During the course, they identified that there was also a need to introduce undergraduate students early in their education to the concepts of adaptive management in a way that was accessible to them since they will likely use the concepts in their future careers.

Dr. Vokoun and his students used a real-world case study of the Herring River estuary in Cape Cod, Massachusetts to facilitate active learning of adaptive management concepts. The main objectives of this case study were to 1.) Introduce students to the concepts and processes of adaptive management and 2.) encourage active learning by students through the use of role-playing and decision-making. The published article also includes teaching notes for educators to use in their curricula.

Dreiss, L.M., D.P. Kloster, M.R. Liverati, J.R. Barclay, J.M. Hessenauer, L.R. Nathan, K.M. O'Connor and J.C. Vokoun. 2015. Introducing adaptive management for natural resources: an estuary case study. *Natural Sciences Education*, 44:149-158.

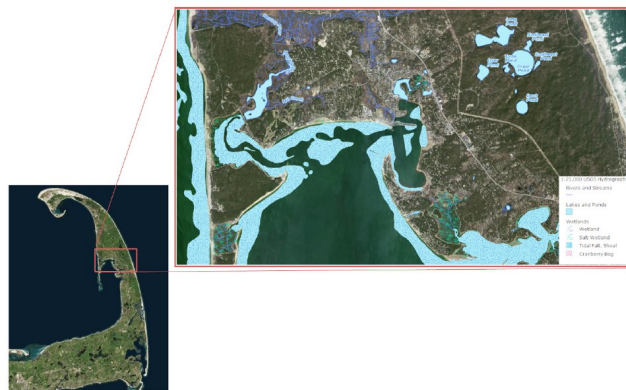


Exhibit 1. Location of the Herring River estuary in Cape Cod, MA. Map created using Massachusetts 2008-2009 USGS Color Ortho Imagery (MassGIS, 2008) and a Mass Water Features layer (MassGIS, 2010).

## South Dakota State University Student Sub-Unit Update

By: Daniel Nelson

Our student sub-unit has had a whirlwind of activity over the past year. With the bringing of the New Year, new officers have been elected, of which three are undergraduates who are excited to share their talents with our society. The 2015 school year brought back students with previous experience, but more importantly many new faces such that our total members have increased from last year.



Members got an early start to summer by helping the Kapeska Chapter of Izaak Walton League of America out at Memorial Park in Watertown with their first “Water Resource Day.”

South Dakota State began a Natural Resources Camp that allows high schoolers to explore all aspects of natural resources. Students joined AFS members at Oak Lake Field Station retrieving trap nets and sorting through the fish that were captured. Fisheries Society members taught the students how the different gears worked, basic lake ecology, and fish identification.

The learning didn’t stop there. Upward Bound, a federally funded educational program, joined a group of undergraduate and graduate students at Oak Lake Field station later that summer. Students got a chance to learn about lake ecology, gear selectivity, and fish identification. Even better, students got to wader-up and get in the water to pull in trap nets and backpack electrofish. Faces were nothing but smiles at the end of the day as it was some of the students first time getting to hold a fish!



Our sub-unit then moved closer to home and hosted two days worth of middle school students from Brookings Middle School at the Dakota Nature Center in Brookings. Once again kids got to learn not only how to identify and capture the fish, but also what kind of results we can get from the data that are collected. The kids had fun pulling seines through the grass “capturing” their fellow classmates.





# South Dakota State University Student Sub-Unit Update

Towards the end of summer a caravan of SDSU AFS member woke up before the sunrise and drove out to Whitlock's Bay to help South Dakota Department of Game, Fish and Parks with their annual salmon spawn. Students got to experience how ferocious salmon can be in the raceways as well as the proper technique of milt extraction. It was definitely an eye-opening experience for undergrads and graduate students alike.

Finally SDSU AFS is gearing up to put together their annual job fair where natural resource employers from multiple states come to find their upcoming field season workers. This is just another step preparing our students for not only working out in the field, but the process that it takes to be considered for a job that they apply for.

South Dakota State University AFS is always looking for opportunities to collaborate and help so if you or someone you know is seeking help fisheries work feel free to get a hold of our chapter.

with their student





## Excellence in Fisheries Education Award

The American Fisheries Society (AFS) Excellence in Fisheries Education Award was established in 1988. The award is administered by the Education Section and is presented to an individual to recognize excellence in organized teaching and advising in some aspect of fisheries education. Nominees may be involved in extension or continuing education, as well as traditional college and university instruction. Nominees must be AFS members, have been actively engaged in fisheries education within the last five years, and have had at least 10 years of professional employment experience in fisheries education. Two or more people may act as nominators, but at least one nominator must be an AFS member. The nominator(s) is responsible for compiling supporting material and submitting the application. The suggested format for applications can be found on the Education Section web site. Please include in the nomination letter, the nominee's title and full contact information (i.e., address, e-mail, phone, etc.) to complete the package.

Nomination deadline is April 1, 2016  
 Contact: Greg Whitlege, Committee Chair  
 Email: [gwhit@siu.edu](mailto:gwhit@siu.edu)

## John E. Skinner Memorial Fund Award

The John E. Skinner Memorial Fund was established in memory of John Skinner, former California-Nevada Chapter and Western Division AFS President. The fund provides monetary travel awards for deserving graduate students or exceptional undergraduate students to attend the AFS annual meeting. The 2016 meeting will be held in Kansas City, MO, in August.

Any student who is active in fisheries or related aquatic disciplines is eligible to apply. Awardees are chosen by a committee of the AFS Education Section. Selection is based on academic qualifications, professional service, and reasons for attending the 2016 meeting. Travel support (up to \$800 per award) will be made available to successful applicants. Award winners will also receive a one year paid membership to the American Fisheries Society.

Applications are available at:

- Student form: [AFS Skinner Application Form – Part I 2016](#)
- Mentor form: [AFS Skinner Application Form – Part II 2016](#)

Both the student and mentor applications must be received no later than March 31, 2016.

For more information about the John E. Skinner Award contact:

Julianne Harris, Committee Chair  
 1211 SE Cardinal Court, Suite 100  
 Vancouver, WA 98683  
 Phone: (360) 604-2551  
 Fax: (360) 604-2505  
 Email: [Julianne\\_Harris@fws.gov](mailto:Julianne_Harris@fws.gov)



## Interested in Competing for Best Student Paper/Poster?

The Best Student Oral Presentation Symposium will be held Monday (8/21/16) morning and afternoon at the Annual AFS meeting in Kansas City, Missouri.

Best Student Poster Symposium will be held on the evening of Monday (8/21/16).

Award recipients will be announced at the AFS Business Meeting on Tuesday (8/22/16). Attendance required!

Information: <http://education.fisheries.org/awards>

### Best Student Oral Presentation – **Due by Friday February 19th:**

- 1) Self identify during the online abstract submission
- 2) Upload both a standard AND an extended abstract.
- 3) Arrange for your advisor to submit an e-mail to the symposium co-chairs indicating that the study is at or near completion

### Best Student Poster Presentation – **Due by Friday February 19th:**

- 1) Self identify during the online abstract submission
- 2) Upload only a standard abstract
- 3) Arrange for your advisor to submit an e-mail to the symposium co-chairs indicating that the study is at a stage appropriate for consideration for this award

### **\*\* NEW FOR 2016 \*\***

No extended abstract is required to be considered for the Best Student Poster Presentation.

### Questions:

2016 student paper/poster symposium co-chairs:

Mark Fincel (Mark.Fincel@state.sd.us)

Amanda Rosenberger (rosenbergera@missouri.edu)

Dan Shoup (dshoup@okstate.edu)

# 2016 Young Professional Travel Award



The Education Section of the American Fisheries Society is currently accepting applications for the Young Professional Travel Award for the 2016 Annual Meeting of the American Fisheries Society in Kansas City, Missouri.

The Young Professional Travel Award was established to promote attendance of young professionals at the Annual Meeting who have made substantial contributions to the field through continued education, outreach, and AFS service. The award provides up to \$1,000 in travel support. Preference will be given to individuals presenting at the meeting, those involved in continuing education or outreach, and those in need of financial assistance for travel.

All young professional members (**within 5 years post-graduation at the time of application**), including agency biologists, postdoctoral associates, and faculty are encouraged to apply. The award winner will be required to attend the Education Section business meeting to receive the award and contribute to the Section's winter newsletter.

The application should consist of the following:

- Letter of interest

  - Statement of service to the Society, Sections, Divisions, or Chapters and why you want to attend the meeting

  - Statement of continued education effort and outreach

  - Statement of financial need

  - Statement of career goals

- Current résumé, degree(s), list of publications, honors and awards, and presentations

- Title and abstract of the contributed paper(s) or poster(s) being presented at the annual meeting

Applications should be submitted online at <http://students.fisheries.org/awards-and-scholarships/annual-meeting-2/young-professional-travel-award/> and must be received by **April 1, 2016**. The recipient will be notified by April 15<sup>th</sup>, 2016. Note that you must be registered on the Subsection website to complete the form.



## University of Wisconsin-Stevens Point Basic & Advanced Courses – Spring 2016

### Principles of Aquaponics - Biology 380 – 2 credits

*Non-credit, reduced fee option available for those interested in the course but not needing college credit.*

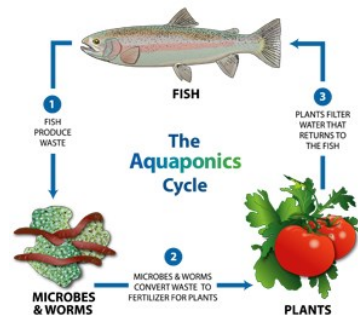
Online lectures (March 2 – May 12) with weekly online discussion sessions.

General principles of the integrated science of aquaponics, the combination of aquaculture (fish culture) and hydroponics (soilless plant culture). Introductory knowledge of aquaponic systems, biological functions, socio-economics & marketing.

### Introduction to Aquaponics - Biology 384 – 3 credits

Hybrid course: Online lectures (March 2 – May 12) with weekly online discussion sessions; In-person lab sessions meet (May 23 – May 25) at the UWSP Aquaponics Innovation Center, Nelson & Pade, Inc. campus, Montello, WI.

Biological system designs, production techniques and methods for the integrated science of aquaponics, the combination of aquaculture (fish culture) and hydroponics (soilless plant culture). Foundational knowledge of aquaponic food production, fish culture, crop selection, good agriculture & best management practices, and economics & marketing. Includes 3-day, hands-on lab sessions in May.



Registration is open at: <http://www.uwsp.edu/conted/credit/Pages/Spring2015/CourseListing.aspx>

Additional registration questions, contact Shelia Bannister-Gross ([sbannist@uwsp.edu](mailto:sbannist@uwsp.edu)), Toll free (800) 898-9472, Ext. 3913.

For general or course-related questions, contact Dr. Chris Hartleb ([chartleb@uwsp.edu](mailto:chartleb@uwsp.edu)), (715) 346-3228.

## Editors' Note

Photos of Portland and Annual Meeting courtesy of Richard Grost.

If you have comments or suggestions, please feel free to contact us. We encourage submissions and ideas for future issues of the newsletter (June/July 2016). Contributions, comments and suggestions may be emailed to us at any time.



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