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EDUCATION SECTION

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President's Line

I hope this newsletter finds you well and that you are having a safe and happy summer. Summer is the time of year when we all flock to the field, catch up in the office, and spend time with friends and family. Summer is also the time of year when we are busy preparing for the AFS Annual Meeting. With a Section as active as ours, you can bet that there is a lot going on behind the scenes! With that in mind, I would like to use this President's Line to tell you a little bit about some of the accomplishments, activities, and needs of the Section.

Mike Quist *is an Assistant Unit Leader at the Idaho Cooperative Fish and Wildlife Research Unit and can be reached at* mcquist@uidaho.edu

First, I would like to acknowledge our new newsletter editors, Landon Pierce and Cari-Ann Hayer. They have been working hard to compile and edit the newsletter. I would also like to thank Steven Ranney for his continued service as the Section's webmaster. Serving as newsletter editor or webmaster is often a thankless job, but the newsletter and website play vital roles in providing a mechanism for informing members of Section activities. If you get a chance, please be sure to thank Cari-Ann, Landon, and Steven for their service.

As you all know, the Section administers a number of awards every year. It would be interesting to tally up how many hours are devoted by committee members—I do not want to wage a guess, but I know it is a lot. Jason Vokoun serves as Chair of the Excellence in Fisheries Education Award (EFEA). The EFEA is a society-level award that the Section administers, and is presented to an individual to recognize excellence in organized teaching and advising in some aspect of fisheries education. Jason and his committee have been actively reading through the nomination packets and will present their results at our business meeting. The John E. Skinner Award is another important award administered by the Section. The award supports travel for students to attend the AFS Annual Meeting and is one of the most prestigious awards given to students in fisheries. Dan Daugherty (Chair) and his committee have been busy sorting through nomination packets and ranking applicants. They will be awarding 10 awards and five honorable mentions at this year's meeting. The Membership Committee established a new award last year, the Young Professional Travel Award. The award was designed to recognize an exceptional, "young" professional member of AFS (i.e., < 3 years post-graduation).

President's Line (cont.)

The award supports travel ($1,000) to the Annual Meeting and provides a 1-year membership to AFS. The committee is co-chaired by Jesse Fischer and Kristal Schneider. Like the EFEA and Skinner awards, the committee has been busy reading through applications and selecting a winner. One of the most important activities conducted by the Section is organizing the Best Student Paper and Poster Symposia. Melissa Wuellner and Shannon Fisher have done a truly exemplary job in working with the Program Committee for the AFS Annual Meeting to organize the symposia. Both symposia (i.e., paper and poster) will be conducted Monday afternoon and Tuesday morning. Posters will be displayed in the Exhibition Hall and paper presentations will be in Ballroom D of the St. Paul River Centre. Please show your support and attend the symposia if you are able—I promise you will not be disappointed in the quality of the papers and posters. As you can see, the Section has a lot going on with regard to various awards designed to recognize those moving the profession forward. I thank all those who took the time to nominate their students and colleagues for an award, as well as the committee chairs, committee members, and judges for their service to the Section.

In addition to awards, the Section has a number of other committees and special projects. For example, the Section has supported several book projects in recent years. We have two book projects that are very close to being completed—Fisheries Techniques, third edition (co-edited by Al Zale, Donna Parrish, and Trent Sutton) and Scientific Communication for Natural Resource Professionals (co-edited by Cecil Jennings, Tom Lauer, and Bruce Vondracek)—and promise to be bestsellers. We are also supporting a new book, titled Foundations of Fisheries Science (co-edited by Mike Allen and Gregg Sass). The purpose of the book is to reprint seminal fisheries papers in one book and provide readers with a sense of how major concepts in fisheries emerged and how those ideas have shaped fisheries science. The Section is always looking for new ideas for books and other Section activities, so send them my way or to the New Initiatives Committee (colvin.mike@gmail.com).

As you can see from this newsletter, the Education Section is an active group. If you are not already active, please consider contributing your time and expertise to the Section. I promise that you'll receive more than you give. If you have any questions, comments, or ideas, please do not hesitate to send me an email (mcquist@uidaho.edu) or give me a call (208-885-4064). In the meantime, I look forward to seeing you all in Minnesota. **Just a quick reminder that our business meeting will be held on Sunday, August 19 (5-7 pm; Crowne Plaza Kellogg I).**

Conservation Via Scientific Literacy: Hook Them With Fish

By E Dale Broder
(More information @ DaleBroder.wordpress.com)

"successful conservation depends on a scientifically literate public"
-Frank et al. 2009 (October issue of Fisheries)

Using fish to engage students, I designed simple behavior experiments that the students could conduct, therefore gaining an appreciation for the scientific process through experimental learning.

Traditional outreach efforts in fisheries engage a range of age groups and span a variety of topics in fisheries including conservation, but rarely emphasize scientific literacy. We can maximize our outreach efforts by combining the tangible and charismatic nature of fish with education about the scientific process while targeting underrepresented groups that would otherwise have limited access to both fish biology and science. In addition, studies show that attitudes about science become fixed before students enter high school suggesting that we should engage elementary and middle school students. Using this information about maximizing the effects of outreach, I developed a program in northern Colorado that has grown to include four schools and 735 students in just three years.

"Science gets kids to research more about things. It gets their minds working and creates questions they don't know existed." -Ayana McCormick (age 9)

Here I present one example of a successful outreach program, and I encourage others to consider using fish as a tangible and engaging tool to increase scientific literacy in addition to other outreach goals.

Protocol

1. I introduced the scientific process, gave an overview of guppy biology, and helped the students develop testable hypotheses for the experiments I developed.
2. The students conducted individual behavioral experiments and recorded data.
3. We entered and analyzed the data and discussed our findings.

Guppies are easy to transport and house at participating schools, have a variety of easily observable behaviors, and have been domesticated providing two groups of fish that can be compared and contrasted: native guppies and artificially selected aquarium breeds.

Dissemination

Fourth graders from Lopez Elementary and Bella Romero Elementary independently created posters and presented their findings at the Front Range Student Ecology Symposium (Fort Collins, CO) in 2012.

"I learned that there is more to guppies than them being a fish." -Darien Toureene (age 10)

"The experiment made me want to do more research and maybe become a scientist." - Dayne Hall (age 10)

Increasing Interest in Pacific Lamprey (*Entosphenus tridentatus*) Research May Provide More Education and Employment Opportunities in the Pacific Northwest

By Brad Trumbo

What is the first thing that comes to mind upon hearing the words "anadromous" or "fish passage"? For many folks in fisheries science, salmon, steelhead and dams are probably among the top five immediate thoughts and for good reason. Since the beginning of the Federal Columbia River Power System (FCRPS) upon completion of Bonneville Dam in 1938, the FCRPS has grown to 31 dams in the Columbia River Basin (CRB) (USACE et al. 2003). The affect of the FCRPS on fish migration, both upstream and down, has led to years of research on the migration behaviors, success and survival of salmon and steelhead.

Brad Trumbo is a Fishery Biologist for the US Army Corps of Engineers, Walla Walla District

Fish passage research, in a general sense, focuses on evaluating the passage success of upstream migrants and the survival of downstream migrants to identify areas of concern and determine how to provide a safer, more successful passage experience. Upstream salmonid migration has been improved by the construction of fishways, as well as adding auxiliary water supply pumps to provide stronger flow to the fish ladder entrances. Dam operations have been refined such as total dam discharge and turbine unit operating priority and discharge requirements for adult salmonid attraction to fishways. Downstream migration has been studied in depth and the results have provided some excellent fish passage improvements. Flow deflectors on spillways have reduced in-river dissolved gas levels (which is also beneficial to upstream migrants). Turbine passage continues to be studied to determine the probability of mechanical (direct) and pressure and predation (indirect) injury which has led to more innovative turbine designs such as the minimum gap runner (MGR) Kaplan turbine. Fish transport and operations requirements, such as spill and powerhouse discharge have all allowed for increased adult salmon and steelhead returns to the CRB.

While the Pacific Northwest region holds a wealth of knowledge about anadromous salmonids, there is another species of anadromous fish in the CRB that we don't know quite so much about. How many times has a fish passage literature search turned up an article about Pacific lamprey (*Entosphenus tridentatus*)? You have to know what you are looking for and still may not find exactly what you need. Times are changing, however, and Pacific lamprey research is growing in popularity, particularly among tribal nations in the CRB. Federal agencies and tribal nations, National Oceanic and Atmospheric Administration (NOAA), US Army Corps of Engineers (USACE),

Pacific Lamprey Research (cont.)

Bonneville Power Administration (BPA), US Fish and Wildlife Service (USFWS), Columbia River Inter-Tribal Fish Commission (CRITFC)) are currently more aware of lamprey passage unknowns and lamprey research has become more important to the region. The USACE has been funding lamprey work since the mid 1990's; however, spending for lamprey has averaged $5 million per year in recent years. Currently USACE, BPA and USFWS fund lamprey work; much of which is used cooperatively among USACE, USFWS, and the tribal nations.

In 2008, USACE, BPA, Bureau of Reclamation, CRITFC, and several other tribal nations entered an agreement detailed in the Columbia Basin Fish Accords (Accords) to ensure that the USACE continues to research and improve conditions for lamprey passage at mainstem FCRPS dams (USACE 2008). Subsequent to the creation of the Accords, USACE devised a 10-year implementation plan to address lamprey passage and outline the commitments made by USACE in the Accords (USACE 2009).

In the past decade about a dozen studies on lamprey passage have been conducted. The majority of these studies have focused on adult lamprey passage efficiency through fishways by evaluating passage time and proportion of lamprey detected at a fishway entrance and successfully ascending the fishway. Others have studied the feasibility of tagging lamprey and run timing (when fish migrate and what environmental cues drive that timing). A common finding of passage efficiency studies is that high water velocities and the physical configuration of fishways may inhibit lamprey passage, yet other bottlenecks may exist. The addition of attachment plates and passage orifices within fishways, as well as altering the shape of fishway entrance structures, has proven to be beneficial to lamprey passage. Downstream passage survival has not been studied in-depth to date but a small laboratory study in 2011 exposing juvenile western brook lamprey (*Lampetra richardonii*) and Pacific lamprey to simulated turbine pressure changes suggested that lamprey exhibit no sign of injury from sustained and extreme low pressures, unlike their swim bladder-equipped salmonid counterparts (Colotelo et al. 2012). Currently, the USACE Turbine Survival Program is designing both fixed blade and adjustable Kaplan turbines for Ice Harbor Dam using fish passage criteria to reduce to potential for pressure and mechanical injury. Although the design criteria is based on data collected on the mechanisms of injury for juvenile salmonids, the passage benefits of the new design (reduction of both direct and indirect injury) will be realized by both juvenile salmonids and lamprey alike.

Currently, design efforts are being made for conducting downstream passage survival studies for juvenile lamprey, as well as continued upstream migration studies and possible fishway floor and entrance improvements for adult lamprey. While dam operations during salmonid migration periods are court mandated and may not change to reflect best operating conditions for lamprey, they will still benefit from improvements to existing structures designed for lamprey passage. Operations for lamprey passage may also be implemented outside of the salmonid migration period when a benefit may be realized by lamprey.

Pacific Lamprey Research (cont.)

The take home message is this: known fish passage technology and research methodologies are being innovatively adapted to lamprey studies with growing interest. Lamprey research conducted in the next decade will provide new information generated about a species which has received less attention than their salmonid counterparts in the past. A solid research foundation currently exists from the years of anadromous salmonid research which may accelerate the rate at which meaningful studies may be conducted on lamprey. This may provide an increase in opportunities for graduate and PhD positions, as well as with tribal nations and government agencies. If you have an interest in acoustic telemetry or simply conducting cutting edge fish passage research in the Pacific Northwest we just might be entering the "golden age" for lamprey, although it may be short-lived so stay tuned in and jump at your opportunities. While lamprey research may not be as glamorous or romantic as research focused on salmon recovery, the research is still exciting and will lead to new information that will be useful in conserving populations of another, odd but interesting species of concern.

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EPA's Bristol Bay Watershed Assessment

By Samuel Snyder, PhD

On May 18, 2012, the EPA released its draft Watershed Assessment of Bristol Bay. The Assessment is the result of requests by the people, interests and communities of Bristol Bay that the EPA utilize its authority under the Clean Water Act to regulate the disposal of mining waste in crucial salmon bearing waters.

As you might know, Bristol Bay Alaska supports the world's largest all wild sockeye salmon runs; an estimated 1.7 billion sockeye salmon have returned there since 1956. A recent article in NATURE attributes this extraordinary abundance to high salmon biodiversity, which is linked to intact healthy salmon ecosystems and favorable ocean conditions. Although sockeye salmon are most abundant, Bristol Bay also supports the world's fourth largest Chinook (king) salmon run, as well as healthy coho, pink and chum salmon runs. Non-commercial species such as rainbow trout, char, and whitefish also thrive there.

Aquatic species extinction rates for North America are estimated at 4% per decade; approximately five times that for terrestrial fauna. Trends are linked to extensive human mediated habitat destruction and degradation. Salmon, once abundant along both the East and West coasts of North America, are also in decline. Atlantic salmon are endangered in the U.S. with native populations persisting only in Maine. Pacific salmon stocks in the contiguous U.S. are estimated at less than 8% of historic run sizes and British Columbia stocks at about 36% historic run sizes. Mitigation, habitat rehabilitation, and hatcheries have failed to reverse this trend. In contrast, Alaskan stocks are estimated to be at about 107% of historic abundance.

This 339-page scientific report -- more than a year in the making -- concludes that even without a major accident or catastrophe, a mine the size of the Pebble poses significant unacceptable and adverse risks to Bristol Bay's world class salmon fishery. Utilizing clear methodologies and drawing on the most up to date data and peer reviewed publications, the Watershed Assessment clearly shows that the preponderance of evidence indicates large-scale, open-pit copper-sulfide mining poses a high risk to Bristol Bay salmon ecosystems and poses a threat to long-term sustainability of the salmon.

Some of those findings include:

- Even at its minimum size, mining Pebble could remove up to 87 miles of salmon streams and thousands of acres of wetlands – key habitat for sockeye and other fishes.
- At minimum size, mining the Pebble deposit would create a more than 1300 acre mine pit, a 3600 acre tailings compound behind a 685-foot high earthen dam and another 2300 acre waste rock pile.
- Mining would produce acidic and metals-laden waters. Based on the nature of these materials, it is extremely

Bristol Bay (cont.)

unlikely that the mine could operate without degrading water quality downstream, particularly given the perpetual management required.

- If not properly managed, the waste rock piles could leach up to 2.8 billion gallons of contaminated water a year into Upper Talarik Creek and flow into Lake Iliamna, the largest sockeye salmon rearing lake in the world.
- There are no examples of such successful, long-term collection and treatment systems for mines, because these time periods exceed the lifespan of most past large-scale mining activities, as well as most human institutions… Engineered waste storage systems of mines have only been in existence for about 50 years.

As members of the scientific and fisheries community, we urge to you take a look at the draft watershed assessment and comment to EPA on the merits of their work. If you are concerned with the potential impacts of large scale, metallic sulfide mining in Bristol Bay, we encourage you to share your concerns with EPA. They are currently collecting comments from the public. **The comment period closes July 23. Comments can be directed to: http://www.regulations.gov/#!documentDetail;D=EPA-HQ-ORD-2012-0276-0001**

NOAA Fisheries Holds Ocean Literacy Workshop

By Kim Marshall McLean

On June 14th and 15th, NOAA Fisheries held an ocean literacy workshop for twenty 4th grade elementary school teachers, which focused on teaching fundamental concepts needed to understand the ecological, social, and economic elements involved in fisheries sustainability. The workshop was carried out in partnership with educators from the Maryland State Department of Education, Montgomery County Public Schools, and The Audubon Naturalist Society and is the first of its kind on this topic. The workshop filled within two days of the initial announcement with a waitlist comprised of 12 more teachers.

Its design is unique in aligning ocean literacy concepts with local Grade 4 curriculum and newly-implemented Maryland state environmental literacy standards, helping teachers and students make connections "from the schoolyard to the ocean." Teachers are brought

NOAA (cont.)

through the fundamentals of ocean science leading up to an understanding of ocean resource sustainability and how it is managed through NOAA Fisheries. Workshop facilitators use striped bass as a model to connect concepts and provide continuity among workshop modules from the physical and chemical properties of the ocean, adaptations for life in the ocean, ocean ecosystems, gathering and using data, human impacts and mitigations (such as for marine debris), and ocean stewardship, including making seafood choices.

Feedback from teachers has been most impressive:

"It was, without a doubt, one of the very best workshops I have ever participated in! Everyone was cheerful, knowledgeable and VERY engaging!"

"It was the best workshop. I look forward to teaching the 4th grade curriculum more than ever coming this fall. I learned so much from these talented and devoted instructors."

"I feel more confident than I ever have as a result of this workshop."

"[The workshop] should be a prerequisite for any teacher joining a 4th grade team."

The workshop is the pilot of a new model for K-5 ocean literacy developed by Kim Marshall McLean of NOAA Fisheries as a focus of her PhD dissertation studies in Environmental Science & Policy at George Mason University. Kim's study emphasizes the importance of early childhood experiences in nature, as well as formal K-5 education, on ocean stewardship.

For more information email Kim Marshall McLean at kim.marshall@noaa.gov

Education Section Committee Reports

Membership Committee

Jesse Fischer and Kristal Schneider, Co-Chairs of the Membership Committee

The Membership Committee of the Education Section oversees the Young Professional Travel Award (YPTA) that was established in 2011. The applications were reviewed by a committee consisting of the co-chairs (Kristal Schneider and Jesse Fischer), the Student Subsection President (Jeff Fore), the 2011 award winner (Julie Harris), and Quinton Phelps. Applications for the 2012 YPTA award were due on May 31st, 2012 and 10 applications were received.

Next year, the membership committee will attempt to increase the number of applications by increasing awareness of the award through increased emails to young professionals and continue including announcements on the Education Section website and in the newsletter.

Nominating Committee

Steve Chipps, Nominating Chair

Elections for new Division Representatives (North Central Division and Northeastern Division) for the Education Section will be held in 2012. To encourage voting among members, the Section's Nominating Committee will sponsor a raffle and all members who participate in electronic voting will be entered for a free AFS t-shirt from the Minneapolis meeting.

New Initiatives Committee

Michael Colvin, Chair of the New Initiatives Committee

Identifying new initiatives

New initiatives were solicited through interactions with existing Education Section members, a request for ideas in the newsletter, and a posting on the Student Subsection and AFS Facebook pages. Initial ideas were organized into five themes including: 1) Scholarships, 2) Continuing education, 3) Section awards, 4) Media, and 5) Funding requests. A brief overview of each theme follows.

- **Scholarships:** Ideas for new scholarships have revolved around increasing opportunities for undergraduates to attend and present at the annual meeting. This would require a financial commitment from the section to provide support for undergraduates to travel and attend the meeting.

- **Continuing education:** Committee members believe that Section funds may be able to support a distance education opportunity in conjunction with the annual meeting. In the past it has been expensive to pay for services of offering distance education at the host venue and provide virtual attendance; however excess funds could provide a means to provide this service.

- **Section awards:** The idea of adding awards for early career teacher/mentor as well as a graduate student teaching/mentoring awards were proposed to the committee. This initiative would focus on recognizing early career educators. Additional awards likely will not cost as much relative to the other proposed initiatives.

- **Media:** In an increasing digital society, the use of digital/online media by the Section has been identified as a potential use of excess funds. These are not just powerpoints posted on the website, but videos with production value developed by a media company (e.g., Freshwaters Illustrated). A number of topics have been identified including: undergraduate certification, undergraduate tutorials (i.e., what is stock assessment?), getting into graduate school, and tutorials on common fisheries methodologies and analysis. The idea behind this initiative is to provide student subunits with material that can be viewed during meetings and that could potentially provide colleges and universities with additional recruitment materials

- **Funding request:** The committee received two inquiries regarding providing support to local fisheries biologists to provide high school educational opportunities and natural resource educational society meetings.

Vetting new initiatives

Identifying which initiatives fit the mission and future direction of the Section will be difficult and a topic of further work within the committee. One potential mechanism of vetting new initiatives may be the use of online voting by members. This should reduce the number of potential initiatives for consideration by the EXCOM.

Foundations of Fisheries Science Book Update

By Greg G. Sass and Micheal S. Allen

The objective of *Foundations of Fisheries Science* is to highlight the classic and seminal works (i.e., scientific papers) associated with fisheries science. The book will be organized into five sections, each highlighting a critical component of fisheries science (I. Managing Fish Stocks, II. Managing People - Human Dimensions and Economics, III. Managing Habitat and Ecosystems, IV. Managing Fish Communities, and V. Managing Fisheries Enhancements). *Foundations of Fisheries Science* will be solely focused on articles with direct relevance to fisheries management. *Foundations of Fisheries Science* may be used as a reference or text book to lead undergraduate and graduate courses and discussions. Our goal for *Foundations of Fisheries Science* is to provide a compilation of the most influential papers to better understand how fisheries science has progressed as a discipline.

In spring 2012, we administered a survey to the AFS membership and to several other fisheries societies around the world to solicit input on influential papers within each section. Upon closing the survey and compiling the data, influential papers within each section were identified. Thanks to the support we received from the Education Section, we were able to meet in person in May to discuss and finalize a list of potential articles to be reprinted in the book. With input from our section editors (Managing Fish Stocks – Carl Walters, Managing People – Robert Arlinghaus, Managing Habitat and Ecosystems – Daniel Schindler, Managing Fish Communities – Jim Kitchell, Managing Fisheries Enhancements – Kai Lorenzen), we have finalized the list of papers that will be included within *Foundations of Fisheries Science*.

During summer 2012, our section editors will summarize and discuss the importance of the selected articles for advancing the discipline of fisheries science. These commentaries will be included in the book to serve as a preface to the reprinted articles in each section. In October 2012, we will meet in person again to write the introduction and conclusion to the book. We anticipate submitting the first draft of the book to AFS in late 2012.

We would like to thank the AFS Education and Fish Management sections for supporting this effort. We would also like to thank Molly Spacapan (U of Illinois), Melissa Allen (UW-Madison, Center for Limnology library), and Aaron Lerner (AFS publications) for all of their help in regards to this effort.

Education Section Supports Student Colloquia

2012 Annual Midwest Student Fisheries Colloquium

By Greg Gaulke, President, University of Illinois student subunit of AFS

On January 20th and 21st, 2012 the American Fisheries Society Student Subunit at the University of Illinois hosted the 5th Annual Midwest Student Fisheries Colloquium. This two-day event brought students from all academic levels to the University to showcase their current research, practice giving a professional talk, receive valuable feedback, strengthen their professional networks, and promote the inter-institutional exchange of ideas.

On Friday the 20th, a dinner was hosted for all the attendees with an accompanying poster session. In all, we had 6 posters that were presented among the attendees which were received with excellent discussions and helped "break the ice". The dinner, catered by a local barbecue restaurant, was a huge success and was well received by all who attended. Following the dinner, our keynote speaker, Dr. Dave Philipp, gave a talk on bass management and angling effects on recruitment. At the conclusion of his talk, people were invited and encouraged to talk with the handful of fisheries professionals from the University who attended the dinner (Dr. Dave Philipp, Jeff Stein, Julie Claussen, Dr. Cory Suski, Dr. Yong Cao) before heading to the social held at a local establishment.

The following morning, the attendees were invited to a small breakfast outside the symposium room where coffee, tea, juice, and assorted breakfast items were set out. Throughout the day, 15 people gave oral presentations on their research, with topics including (but not limited to) larval fish community structures, thermal effluent impacts on sport fish, and stress responses of pallid sturgeon. Participants were respectful and posed thoughtful and insightful questions in response to the different topics being presented.

The symposium was an incredible success, with the majority of participants commenting on the professionalism of the event, as well as the high level of organization. In total, there were seven universities represented at the colloquium (South Dakota State University, University of Toledo, University of Missouri , UW-Stevens Point, Southern Illinois University, Eastern Illinois University, and University of Illinois). Of those seven schools, we had nearly 40 participants over the two day colloquium. Without the generous help from the Education Section of AFS, we would not have been able to make this event a success, and we would like to thank you for sponsoring this event.

Student Colloquia (cont.)

2012 Pacific Ecology and Evolution Conference

By Charolotte Whitney

The 2012 Pacific Ecology and Evolution Conference (PEEC) took place in Bamfield, British Columbia, and this 33rd Annual student colloquium was a great success. PEEC is an important early-career conference organized by graduate students for graduate students who are based in the Pacific Northwest studying ecology, biology, and conservation-related fields. This conference provides a forum for presenting current research and gives students an excellent opportunity to make contacts, obtain feedback, and exchange ideas with their peers. Many of the students that gather at Bamfield each year are from local universities including the University of British Columbia (UBC), Simon Fraser University (SFU), and the University of Victoria. Other students come from universities in the provinces of Alberta and Ontario, as well as institutions in Washington and Alaska.


Photo: Ada Roman

This year, 58 attendees presented their scientific findings or research proposals orally and 10 attendees shared poster presentations, in topics ranging from marine biology and conservation to terrestrial ecology, to fisheries management. We also had the pleasure of hosting an excellent plenary talk from Dr. Peter Arcese of UBC's Centre for Applied Conservation Research. Dr. Arcese's keynote presentation, entitled "Planning for the indirect effects of humans on species and ecosystems", captivated the audience of eager ecologists. In addition, this year we were thrilled to host a workshop on communication and scientific education, run by Laurel Johnston, a teacher in education outreach at the Vancouver Aquarium. The goal of the workshop was to help scientists better understand their audience as a group of learners and develop useful tools for communicating science effectively. The workshop was very well received by the participants. Finally, evening festivities are a tradition at PEEC. This year's dance theme was Bamfield's Next Top Model Organism. Attendees were encouraged to dress up as their favorite model organism, the species they study or a species they want to study. The biodiversity on the dance floor was quite remarkable, ranging from sponges and decorator crabs to anglerfish, otters and gazelle; we had representatives from many taxa.


Photo: Jessica Lu

The University of British Columbia's Faculty of Forestry, Departments of Zoology and Botany, and College of Interdisciplinary Studies hosted PEEC 2012. The organizing committee (Kendra Robinson, Natalie Sopinka, Charlotte Whitney, Monica Yau, Tess Grainger, Gerald Singh) would like to extend their many thanks and appreciation to all the attendees of PEEC 2012, the dedicated staff at the BMSC, Lady Rose Marine Services and our generous sponsors, including the AFS Education Section. Next year's event will be hosted by the University of Victoria, and is sure to be great – look for the announcement in the fall!

Student Subsection News

The Student Subsection of the Education Section has been active in a variety of tasks this year. Our major undertaking was to compile a list of the student awards available at all levels of AFS (Parent Society, Sections, Divisions, and State Chapters) and host the awards on our website so that students could have a one-stop-shop as they look for suitable awards. Our webmaster Rebecca Krogman did a fantastic job of posting all the awards on our website - http://www.fisheriessociety.org/edustu/awards/index.php. If your organization would like to host a student award on our website please contact me (Jeff Fore; jdfore@mail.missouri.edu) or Dan Dembkowski (daniel.dembkowski@sdstate.edu) and we will put your information on the website.

Jeff Fore is the president of the Student Subsection and can be reached at jdfore@mail.missouri.edu.

The Student Subsection is also proud to announce that we obtained financial support from the Education Section for an undergraduate travel award to the Parent Society meeting in the Twin Cities. The award is intended to foster undergraduate participation and involvement in Parent Society functions and to increase the undergraduate presence at the Annual Meeting. We will be discussing the future of the award at the Education Section meeting at this year's annual meeting. Please join in the discussion as we look forward to hearing your thoughts and improving the award. **The announcement for this year's award can be found on page 26, and please encourage undergraduates to apply.**

The Student Subsection will be hosting a student colloquium at this year's Annual Meeting that will be focused on increasing students' marketability in four sectors of fisheries: state agencies, federal government, non-governmental organizations, and academia. A panel member will represent each sector and they will give a brief presentation outlining the key skills and methods students can utilize to increase their marketability and success within their respective sectors. Immediately following the presentations will be a question and answer period and student/mentor social.

I look forward to seeing everyone at the student events in Minnesota.

Jeff Fore, President of the Student Subsection of the Education Section

Student Activities

Aquaculture and Fisheries Club at Louisiana State University Promotes Student Development Through Service

By Josh Patterson, current AFC president

The Aquaculture and Fisheries Club (AFC) at LSU has been an active part of the School of Renewable Natural Resources for many years. The 2011-2012 school year was no exception. In addition to the traditional fall pig roast and spring crawfish boil, club members under the guidance of faculty advisors Dr. Chris Green and Dr. Julie Anderson had opportunities to serve both the people and aquatic resources of Louisiana while proudly representing their club, School, and University. A few highlights include the Burger Bash event in October, when AFC members were provided with a forum for recruitment of future members. During Burger Bash, AFC's de facto mascot - Tebow the baby alligator - got a chance to rub elbows with erstwhile LSU Chancellor Mike Martin. During February and March, AFC members served the people of St. Bernard, Plaquemines, and Terrebonne Parishes by helping with a derelict crab trap rodeo sponsored by Louisiana Sea Grant. In all, 2,137 abandoned crab traps were removed from public waters in these parishes! Finally, AFC members volunteered at Ocean Commotion sponsored by Louisiana Sea Grant and in the aquaculture segment of AgMagic sponsored by the LSU AgCenter. Both events allowed club members to have positive interactions with area elementary school children while introducing them to various aspects of fisheries and aquaculture, or simply keeping their tiny fingers out of the snapping turtle tank. It was an eventful couple of semesters for the AFC at LSU, and we look forward to many more.

AFC members and faculty advisors pose for a group shot after the February 25th derelict crab trap rodeo in Delacroix, LA.

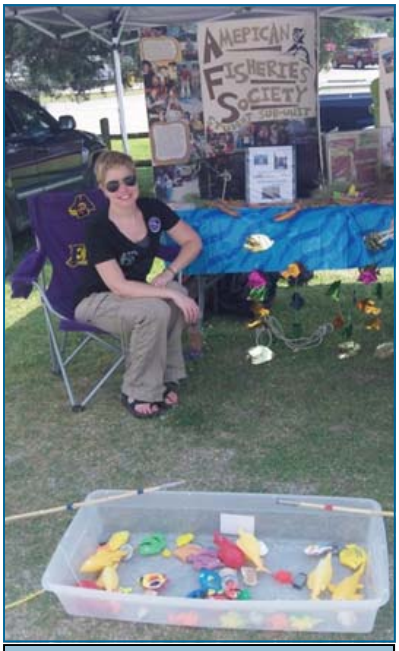
Area schoolchildren and teachers get a hands-on introduction to life in LSU's School of Renewable Natural Resources at Ocean Commotion in the Pete Maravich Assembly Center in Baton Rouge, LA.

Student Activities (cont.)

ECU Student Subunit Pulls Double Duty on Earth Day

By Brie Elking, President of ECU Student Subunit

The East Carolina University (ECU) Student Subunit of The American Fisheries Society (AFS) was very active on Earth Day educating and interacting with the public at both the Shad Festival and A Time for Science. At the Shad Festival a few volunteers set up a booth and engaged the public in conversations about what we stand for and the fish that the festival represented. We also had a game where children could catch fish.



Lyndell Bade at the Shad Festival waiting to help children 'fish'.

After the Shad Festival, we packed up and headed to A Time for Science. Once there, we set up an informational table regarding the various types of fish and their structure. We also pulled some seines in a nearby pond and let the children see and hold the fish we caught. We caught a variety of fish including, bluegill, mudminnows, killifish, bluespotted sunfish, and even a 5 inch largemouth bass. Needless to say, the kids were very excited to see a 'big' fish come up in our net.

After Earth Day we had our end of the year party and voted on our officers for next year. We would like to give a big thanks to all past officers for all of their hard work. Annie Dowling is retiring as president and handing off the baton to Brie Elking and vice president Jeff Dobbs is welcoming Tyler Peacock to the seat. We give a warm welcome to all of our new officers and are looking forward to another year of activities and fun.

Brie Elking (left) and Dan Zapf (right) educating children on substrate sampling at A Time for Science.

Student Activities (cont.)

University of British Columbia and Simon Fraser University Students Establish Student Subunit

By Annie Morgan, Secretary of BC Student Subunit (WA-BC Chapter)

Over the past few months, fisheries students at the University of British Columbia and Simon Fraser University have established a new student subunit open to fisheries and aquatic science students in British Columbia. The Subunit was established to improve communication and collaboration between aquatic science graduate students through social events, conferences, and community events. The students are also interested in establishing a networking foundation with fisheries professionals and faculty in the BC area, as well as utilizing some of the resources available through AFS membership.

Pictured here are (from L to R): Vice President Stephanie Avery-Gomm, Secretary Annie Morgan, President-Elect Natalie Sopinka, Treasurer Kendra Robinson, and President Kelli Stingle

So far, the Subunit has held several meetings among the new officers to determine their mission and objectives, as well as a general interest meeting for students. The word is getting out with a webpage (http://bcstudentafs.wordpress.com/), and a Facebook page. These social media outlets are used frequently to share upcoming events, ideas, and other announcements. Vice-president Stephanie Avery-Gomm recently attended the WA-BC AFS Chapter meeting in Victoria, BC to meet with AFS members, spread the word about the new subunit, and learn what opportunities exist for student members.

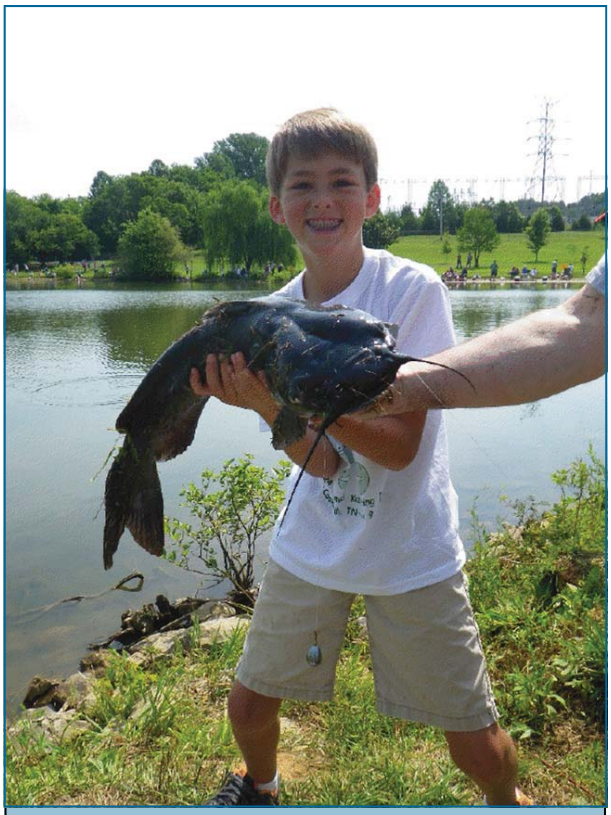
The Subunit members at UBC and SFU will be hosting a meet-and-greet event over the summer, helping to build a strong member base of enthusiastic fisheries students. Fall events will include community service events, career development, guest speakers, panel discussions, and more! The officers and new members are excited to engage with AFS members in Washington and BC to learn more about fisheries research and career opportunities. If you or someone you know is interested in speaking to the new BC Student Subunit, or if you would like to get involved, please contact the Subunit President, Kelli Stingle, at kstingle@sfu.ca or the Subunit Vice-President, Stephanie Avery-Gomm, at Stephanie.averygomm@gmail.com.

Student Activities (cont.)

Tennessee Tech Student Subunit Hosts 24th Annual Kid's Fishing Derby

By Justin Spaulding

On June 9th, 2012, the Tennessee Tech student AFS sub-chapter proudly hosted the 24th annual Kid's Fishing Derby at Cane Creek Park in Cookeville, Tennessee. We gave away thousands of dollars in donated prizes and equipment to the 129 children in attendance at the post-derby cookout and raffle. Anglers had the opportunity to fish for 500 pounds of catfish that were donated by the Tennessee Wildlife Resource Agency and stocked into a blocked off cove. To raise funds for the Derby, we served more than 90 platters at our annual fish fry on April 10th on the Tennessee Tech campus.



Ben Reed, age 11, with his class winning 25" channel catfish.

Other news:

- The Cordell Hull Education Days provided a platform to teach lessons on sampling fish and macroinvertebrate communities along with aquatic biodiversity principles to Smith County elementary school students.
- On April 14 and 15, four undergraduates and three graduate students travelled to the Student Colloquium in Charleston, West Virginia.
- The Subunit sent two undergrads and several graduate students to the Tennessee Chapter meeting at Fall Creek Falls State Park in mid-March.

Student Activities (cont.)

Student Recruitment in a South Dakota Prairie Pothole

By David Deslauriers, SDSU Student Subunit President

The South Dakota State University Student Subunit has been through a year of change where a strong year class has finally shown up at the top. Traditionally driven by graduate students, the Subunit now comprises three undergraduate student officers who have been essential in communicating the role of the Subunit (i.e., promote the conservation, development, and wise use of fisheries) and recruiting their colleagues to the cause. Along with their fellow members, they have organized a well-attended fisheries and wildlife job fair, multiple well-stewed chili-feeds, a larval fish identification workshop (given by Kristen Grohs, USFWS) and a fisheries research fun day for local cub scouts. Although the weather did not cooperate during the entirety of the event, the research fun day was an excellent opportunity for children (approximately 8 to 12 years old) to experience the exciting life of a fisheries researcher. The kids were allowed to capture fish using different sampling gears, take biological measurements and tag the fish before releasing them. The tagging of fish was also meant to initiate what hopefully will become a long-term dataset for future Subunit members to maintain in order to learn more about fish populations from small urban impoundments in the vicinity of Brookings, SD.

Fisheries research fun day

On a separate note, the Subunit held two raffles, which generated funding for various undergraduate travel awards and scholarships. The first raffle was held during the Dakota Chapter of the AFS which every year helps generate monetary prizes for undergraduate students who have interests in fisheries research. This year, five recipients were awarded the Sauger scholarship and were invited to join the conference. In addition, the raffle held during the Missouri River Natural Resource Committee allowed for the funding of four undergraduate students to attend the annual American Fisheries Society (Minneapolis, MN) free of cost.

SDSU Student Subunit members during the Fisheries Research Fun Day

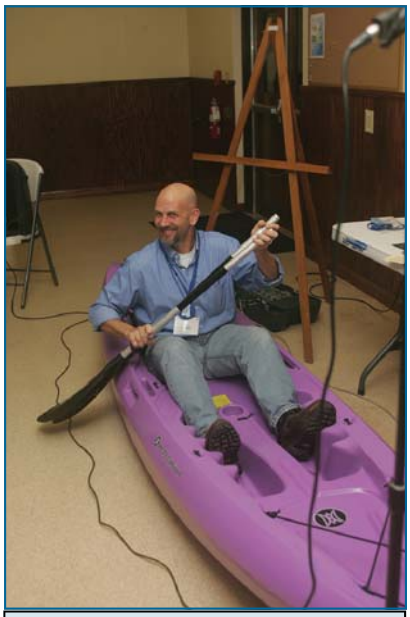
Sauger scholarship recipients from left to right: Chris Longhenry (Dakota Chapter President), Kyle Behl, Austin Galinat, Aaron Andrews, Matt Klein, Aaron Burgad and David Deslauriers (SDSU Student Subunit President)

Student Activities (cont.)

Florida shines with new student members!

By Joy Young

The Florida Chapter of the American Fisheries Society (FLAFS) had its annual meeting at the majestic 4H campus in February 2012. This year's meeting had the best student turn out ever with 25 students representing seven universities in attendance! Students contributed to over half of the research presented during the meeting. To the delight of the students, everyone that applied received a student travel grant. In hopes of carrying on the tradition of funding every student in 2013, this year's raffle and auction for travel funds included $6,000 worth of goods and services. Perhaps it was the extra jingle in our pockets or the jelly baits thrown during the auction, but everyone had a great time! During the student meeting, Janice Kearns and Carly Garreau were elected by popular vote as student president and vice president, respectively. These young professionals got to work immediately building the new Student Subunit website with the help of Emily Haug (www.sdafs.org/flafs/Students/) and are currently working on a Facebook page to help students connect across the state. The chapter also elected to name the best student paper award in memory of Jack Dequine, a dedicated, well-respected, and sorely missed fisheries biologist and advocate of student involvement in FLAFS. Best student presentation winner was Andrew Barbour from University of Florida (UF) and Linda Lombardi (UF) was selected as runner-up. Best student poster went to Chelsey Campbell (UF), and Julie Vecchio (University of South Florida) was selected as runner-up. The Roger Rottmann Memorial Scholarships were awarded to Geoffrey Smith (UF) and Chelsey Campbell (UF) at the doctoral and masters level respectively. The 2012 meeting was a raging success, fostering new relationships between students and with mentors. Although the sun was amiss for most of the meeting, and rain caused an impromptu move of the bonfire, the 2012 meeting really shone with the best student involvement to date!



Past FLAFS president Dave Kerstetter shows off the top prize in the raffle for student travel funds and demonstrates his patented dry-dock paddling technique.

Geoffrey Smith (left) and Chelsey Campbell (right) accept their Roger Rottman Memorial Scholarships at the 2012 FLAFS meeting.

Student Activities (cont.)

Oklahoma State Student Subunit News

By Randy Stewart

The Oklahoma State University Student Subunit of the AFS has volunteered at multiple local community events. Local "Nature Camps" are routinely conducted in the city of Stillwater as a means to educate and increase child participation in outdoor activities each summer. Members of the Student Subunit host a "Kids Fishing Clinic" during these weeks and instruct children (grades 1 to 6) on how to bait hooks, cast lines, remove caught fish, fish identification, and how to release fish properly. Attendance is generally high at these fishing clinics with up to 80 individuals being taught the nuances of fishing over a two-day period. Moreover, members of the Student Subunit participated in Relay for Life by raising over $500 to help fight against cancer and donated Student Subunit t-shirts to cancer survivors that were in attendance. Many members provided oral talks at local and regional AFS meetings, with two graduate students (Joseph Schmitt and Michael Porta) presenting their graduate research to complete their Master's of Science degree requirements.

Members of the Arkansas Chapter of the American Fisheries Society Judge Regional and State Science Fairs

Members of the Arkansas Chapter of American Fisheries Society helped judge science projects at the regional junior high and high school levels in Arkansas. Each winner at the regional science fair in the high school and junior high school division received a certificate from the chapter. Chapter members also judged at the Arkansas State Science Fair. The judges looked at over twenty projects and selected Sarthark Garg as the winner for his project titled "Effects of Malathion on Brine Shrimp". His teacher was Melissa Donham and she also received a certificate.

I would like to thank all the judges who helped and assisted in judging the various science projects. Without their help and dedication to helping these young men and women to achieve their goal as scientist's the science fair project would not happen. I do get feedback from the different regional directors and the state director sometimes and they are very impressed with the way our judges handle themselves at the different fairs. You should all be commended. Again this is a group effort from the AFS Chapter members. Thank you all.

Bill Shinn, Chairman of the Education Liaison Comm.
Arkansas Chapter of American Fisheries Society

New Online Resource from the AFS Fish Culture Section Provides Tips on Giving Presentations

Public speaking isn't something that comes naturally to most people. Like any skill, it takes practice and hard work to develop. But it's not just practice that makes perfect—*perfect* practice makes perfect. In "Power Pointers—Tips and Tricks to Create Effective Presentations", an online lecture available on the Fish Culture Section website, Dr. Jesse Trushenski shares some of the secrets to preparing an effective presentation and delivering it with confidence. The lecture goes over the basic elements of engaging an audience, including the use of clear, aesthetically appealing visual aids. Slide design is then discussed in detail, including descriptions of effective color schemes and fonts and why certain formatting options are better than others. Next, slide transitions and other animations are discussed, with examples of what works and what doesn't. The lecture then goes over strategies for presenting data, including some rules about which types of figures or tables are appropriate for different kinds of data and how to format these to maximize clarity and impact. The lecture concludes with strategies for giving presentations, including tips to help you stick to your timeline and keep your audience engaged. It won't prep your slides or give your presentation for you, but Point Pointers will definitely help you elevate your game the next time you find yourself in front of an audience. To download Power Pointers, click on the following link: https://sites.google.com/site/fishculturesection/resources/tips-on-giving-presentations.

And if you're a fish culturist, biologist, hobbyist, or are working in one of aquaculture's many allied fields, including stock enhancement, imperiled species restoration, fish physiology, nutrition, toxicology, and many others, consider joining the Fish Culture Section today! Visit us online at www.fishculturesection.org for details.

Dr. Jesse Trushenski

Aquatic Resources Education Association biennial conference: October 21-25 in Phoenix, AZ

The Aquatic Resources Education Association (AREA; www.areanet.org) is a professional association of national, state and territorial natural resource and fishery education managers, program coordinators and education specialists, university faculty and others involved or interested in the management and delivery of aquatic resources education programs. The nationwide non-profit association was created to foster, promote and encourage aquatic education with the following purposes:

- Increase aquatic resources education effectiveness
- Provide expertise regarding aquatic education issues, strategies and methodologies
- Provide an organized forum for discussion, deliberation, and resolution
- Support aquatic resource management programs
- Develop strategic plans for the future; provide organization and direction to AREA members
- Serve as a liaison between agencies, industry and state aquatic resource education coordinators
- Promote education and wise-use management and conservation of aquatic resources and those recreational sports related to them

AREA sponsors a conference every two years for exchanging information about aquatic resources programs, program management and program evaluation to assist its members in the administration and delivery of aquatic resource education programs.

Information about the conference may be found at www.areanet.org/conferences.htm and www.azgfd.gov/AREAConf/welcome.shtml.

A call for papers has been issued, http://www.azgfd.gov/AREAConf/papers.shtml.
Abstract deadline: **August 15, 2012**

Contact Doug Darr Doug.Darr@dcnr.alabama.gov for more information

Are you interested in becoming more involved with the Student Subsection?

The Student Subsection of the Education Section is seeking outstanding individuals that are interested in becoming leaders in American Fisheries Society. Candidates needed for the Student Subsection include president-elect (2-year position; one as president elect followed by one as president), secretary-treasurer, and division representatives (i.e., North Central, Northeastern, Southern, Western, Canadian). Duties and responsibilities for each of the officers and the division representatives can be found in the Procedural Manual of the Student Subsection on the Student Subsection's website (http://www.fisheriessociety.org/edustu/membership/index.php).

If you are interested in becoming more involved or simply have questions, please contact Jesse Fischer fischer@iastate.edu.

2012 Best Student Poster Award from AFS FITS! Deadline Extended!

Apply Now!!!

The Best Student Poster Award will be given to a student who demonstrates innovative use of technology in their undergraduate or graduate fisheries research. The award is designed to encourage the dissemination of knowledge gained from the use of cutting-edge technology in fisheries management and science. Examples of previous winning submissions can be seen at: http://www.fishdata.org/PosterAward.htm.

Receive $250 and an honorary plaque!

Students who have posters accepted for the 2012 AFS Annual Meeting in Twin Cities, MN are encouraged to submit your poster's title and abstract by 1 August 2012 to President Jodi Whittier at whittierj@missouri.edu.

New Undergraduate Travel Award to the 2012 Annual Meeting of the AFS in Minnesota

Apply Now!!!

The Student Subsection of the Education Section of the American Fisheries Society (AFS) is currently seeking applicants to apply for the 2012 Student Subsection of the Education Section of the American Fisheries Society Undergraduate Travel Award. This award is designed to introduce undergraduate students to AFS and increase participation of undergraduate students in AFS.

Undergraduate Travel Awards will be awarded to support undergraduate student attendance at the 2012 Annual Meeting of the AFS in Minneapolis, MN, August 19-23, 2012. The Undergraduate Travel Award will provide registration for the annual meeting and membership to the parent society AFS.

Completed applications must be received no later than July 27, 2012. Applicants must be an undergraduate at the time of the Annual Meeting. Application materials and additional information about the award can be found on the Student Subsection webpage: http://www.fisheriessociety.org/edustu/index.php

2012 Annual Meeting of the American Fisheries Society: Education Section-Related Events

Sunday, August 19

5:00-7:00 p.m.	Education Section Meeting (Crowne Plaza– Kellogg I)

Monday, August 20

2:00-4:00 p.m.	Student Colloquium (RiverCentre Ballroom H)
5:30-6:30 p.m.	Student Subsection Business Meeting (RiverCentre Meeting Room 2)

Tuesday, August 21

3:30-5:30 p.m.	AFS Business Meeting (RiverCentre Ballroom FG)
4:00-6:00 p.m.	Student Career Fair (RiverCentre Meeting Room 3)
6:00-10:00 p.m.	Student Social (students only; Eagle Street Grille)

Selected Literature: Summer 2012

Readers are encouraged to provide feedback on this section and to send citations of recommended readings for future newsletters to the newsletter editors.

Habron, G. 2005. Infusing Constructivist Learning in Fisheries Education. Fisheries 30:21-26.

Means, B., Y. Toyama, R. Murphy, M. Bakia, K. Jones. 2009. Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. U.S. Department of Education, Office of Planning, Evaluation, and Policy Development Washington, D.C., 2009.

Millenbath, K. F., B. H. K. Wolter, and W. W. Taylor. 2011. Education in the Era of the Millennials and Implications for Future Fisheries Professionals and Conservation. Fisheries 36:300-304.

National Research Council. 2008. Science, Evolution, and Creationism. Washington, DC: The National Academies Press, Available at http://www.nap.edu/catalog.php?record_id=11876. Related titles available at: http://www.nap.edu/related.php?record_id=11876.

Schmetterling, D. A., and T. Bernd-Cohen. 2002. Native Species Conservation Through Education: The Adopt-A-Trout Program in Montana. Fisheries 27:10-15.

Schultz, L. D., and J. A. VanDeHey. 2012. A Comparison of Stipends, Health Insurance, and Tuition Remission Policies at Fisheries and Wildlife Graduate Programs throughout the United States. Fisheries 37:257-263.

Smith Jaggars, S. and T. Bailey. 2010. Effectiveness of Fully Online Courses for College Students: Response to a Department of Education Meta-analysis. Community College Research Center, Teachers College, Columbia University.

Tallent-Runnels, M.K., J.A. Thomas, W.Y. Lan, S. Cooper, T.C. Ahem, S.M. Shaw, and X. Liu. 2006. Teaching courses online: a review of the research. Review of Educational Research 76:93.

The newsletter editors would like to thank Bill Franzin for his contribution to this section of the newsletter.

EDITORS' NOTE

Feel free to contact us with any suggestions and comments. We would like to encourage submissions and ideas for next issue (January 2013). Contributions, comments and suggestions may be emailed to either of us at anytime.

Sincerely,

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and

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University of Missouri
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llp5yc@mail.missouri.edu

PRESIDENT'S NOTE

The Education Section received one funding request from the Student Subsection. The request is posted on the Education Section website (under Funding Request). Please take a moment to review the request, as we will discuss the proposal at our annual business meeting in Minneapolis-St. Paul.