



ONCORHYNCHUS

Newsletter of the Alaska Chapter, American Fisheries Society
Vol. XXXV Spring 2015 No. 2

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Resident Freshwater Fish Ecology in Arctic Alaska: Understanding Beaded Streams

Kurt Heim

Easily distinguished by their large and vibrantly colored dorsal fins, Arctic Grayling (*Thymallus arcticus*) move upstream in the meltwater flowing over the still-bedfast ice of Crea Creek, a small beaded stream on the Arctic Coastal Plain. After spending the last eight months overwintering in the deeper and larger Ublutuoch River, these fish migrate into this

seasonally available, food-rich habitat each spring. The arrival of the first Arctic Grayling is a welcome site to researchers after camping on the snowy river bluffs for the previous two weeks. Our plan is to capture and equip 500 fish with passive integrated transponder (PIT) tags to study their behavior in this habitat that is frozen solid 8 months of the year. This research was conducted from 2012 to 2013 as one of a series of projects conducted by students and scientists at the University of Alaska Fairbanks (UAF) in what may now be the most well-studied beaded stream in the world. In this article, I share some results of our work on Grayling movement, and integrate findings of colleagues that together help build our understanding of Arctic freshwater fish ecology.

Beaded streams exhibit a morphology consisting of a repeating series of pools connected by narrow stream runs that resemble beads-on-a-string when viewed from the air. These streams form from melting ice-wedges of permafrost in polygonized tundra; water flowing through troughs forms channels, whereas the melting of entire ice-wedges forms pools ("beads") within the drainage network. Until recently, the global distribution of beaded streams was poorly understood. Chris Arp, a UAF hydrologist, conducted a circum-Arctic survey of beaded streams, finding that they occur widely from northern Russia to Canada, most frequently in medium to high ground-ice content permafrost (Arp *et al.* 2015). In Alaska over 275 beaded streams were documented with more likely to be present. In the Fish Creek watershed, home of Crea Creek, beaded streams account for nearly 50% of the entire channel length. Being such an abundant stream type, it is surprising that few research efforts have focused on understanding beaded stream ecology.



Aerial view of a beaded stream, displaying the morphology consisting of small pools connected by narrow stream segments. Photo by Nathan Sather.

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The President's Corner

Jennifer Stahl

With budgets tightening and agencies no longer paying for memberships to professional societies, you may be asking how does an American Fisheries Society (AFS) membership benefit you? I would suggest asking instead the question, "How does your AFS membership benefit fisheries across the state of Alaska and our country?" The



Jennifer Stahl, AFS Alaska Chapter President.

mission of AFS is to improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting the development of fisheries professionals. To accomplish this mission is a huge undertaking in the face of challenges, such as climate change, resource development, and ocean acidification. The AFS is able to accomplish such lofty goals through a large network of fisheries professionals and an organization that is composed of chapters, student subunits, four divisions, and discipline sections. When you become an Alaska Chapter member of AFS, you are also becoming Parent Society and Western Division members. In addition, you have the opportunity to join one of the AFS Discipline sections, so your AFS membership is supporting the work performed by each of these units of AFS. Following are some of the ways that AFS works to support its mission.

Advocacy for fisheries conservation – The Western Division and Parent Society of AFS may take a position on issues that affect the conservation and sustainability of resources in Alaska or other regions. These groups may advocate issues that may be difficult for a chapter to address due to the chapter's close proximity to

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Beaded Streams, continued

Using PIT tags and stationary stream-wide antenna arrays in June 2013, we found that Arctic Grayling moved upstream into Crea Creek immediately after ice break-up. Surprisingly, 43% of the fish tagged and known to have exited Crea Creek in 2012 before freeze-up returned in 2013. Inter-annual site fidelity to feeding locations is common in Arctic Grayling, and is likely related to the short open-water period when little time is available to explore new habitats and foraging success is critical. The timing of movements upstream suggested the fish staged at the mouth of Crea Creek and entered as soon as conditions permitted. In addition to site fidelity, movements into productive habitats as soon as possible after break-up may also be an adaptation to maximize time foraging during the summer.

We documented distinct differences in habitat use patterns between adult and juvenile Grayling within Crea Creek. Adult fish typically used the stream for only several weeks during the period of flooding and high flow ($\sim 1.0 \text{ m}^3/\text{s}$) from June through mid July, before migrating back to the Ublutoch River. After the flooding period, Crea Creek discharge falls to below $0.1 \text{ m}^3/\text{s}$, and temperatures can increase to nearly 20°C , prompting adult Grayling to emigrate from Crea Creek, as adults favor habitats with strong flow and cooler temperatures. Another plausible explanation is that the pattern of adult movement reflects a spawning run within the drainage (we observed young-of-the-year Grayling each year of the study), and the adult segregation of primary summer foraging habitat and spawning habitat is an adaptive strategy evolved to reduce cannibalism. In either case, the early departure of nearly all of the adult Grayling from Crea Creek is surprising in light of the vast amount of food available during summer.

Jason McFarland, a UAF M.S. student, spent the last several years studying beaded stream food webs and collected diet samples from Grayling in Crea Creek. In addition to a wide variety of terrestrial and aquatic macroinvertebrates, Jason found Ninespine Stickleback (*Pungitius pungitius*) were a major diet component of larger Grayling

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The President's Corner, continued

developers or lawmakers. Policy statements and letters may be drafted by the Western Division or Parent Society and sent to lawmakers. For example, the Parent Society recently drafted a document addressing potential fisheries impacts from the proposed open-pit KSM mine located in the Alaska/British Columbia transboundary region. As an AFS member you have the ability to work with these different units of AFS and share your perspective on issues that you feel are affecting fisheries resources.

Organize AFS meetings – As an AFS member you receive a reduced rate for Alaska Chapter, Western Division, and Parent Society meetings. These meetings provide great opportunities to network, keep up-to-date on fisheries research, attend continuing education courses, and, of course, socialize! The 2015 Alaska Chapter meeting will be in Homer, Alaska and the Parent Society meeting will be held in conjunction with the Western Division meeting in Portland, Oregon. The Western Division and Parent Society meetings are a great chance for Alaskans to collaborate with those working in other regions that may have a different perspective on similar issues. Last year, I had the opportunity to attend reproductive and visual survey workshops; the groups that hosted these workshops will be hosting symposia at the Portland meeting, which will expand the topics presented to a larger audience, provide an opportunity to hear updates on projects, and learn about new research. Travel grants are available to attend annual meetings. The Alaska Chapter will be offering funding to travel to its annual meeting for students and through a Cultural Diversity Award. For the upcoming Portland meeting, travel grants are being offered by the Western Division for an international traveler and through an Emerging Leader Mentorship Award. In addition, the Alaska Chapter supported travel for the first time this year for a student to attend the annual student colloquium; the Chapter plans on awarding travel for this event annually and will post information regarding the application procedure on its website.

Support for fisheries and fisheries professionalism through grants and scholarships – AFS offers project support through scholarships and grants. The Western Division has applications open for a \$5,000 graduate level scholarship and the Alaska Chapter offers annually the Molly Ahlgren Scholarship to undergraduate students. The Western Division also offers small project grants to division chapters, subunits, or other fisheries groups to help complement other funding or to get a project started; \$5,000 was offered in 2015.

Recognition of fisheries students and professionals – AFS provides recognition for the hard work of students and professionals. Student awards include the best student paper and poster at annual Chapter and Western Division meetings. The Parent Society annually bestows the Oscar E. Sette Award to an Outstanding Marine Fishery Biologist and the Alaska Chapter presents a Meritorious Service Award for recent accomplishments and the Wally Noerenberg Award for outstanding, long-term, contributions to fisheries.

Build and document professional skills – A professional fisheries certification program is available to AFS members. The program documents recent educational training, service, and proficiency in oral and written communications. These certifications verify that professionals are well rounded in the field of fisheries, an important aspect for individuals seeking potential employment or promotion with existing employers.

Disseminate up-to-date information – In addition, to meetings, AFS offers many ways to keep in the know about current happening in fisheries, including journals, newsletters, and books. With your AFS membership you receive a subscription to Fisheries Magazine which comes out monthly, the bimonthly AFS e-newsletter, and the Alaska Chapter quarterly newsletter. You also receive savings on AFS journals and books.

Provide opportunities for collaboration in fields of expertise – With AFS you can get involved in areas of your expertise and collaborate with other fisheries professionals. There are 22

The President's Corner, continued

different AFS Discipline Sections (<http://fisheries.org/sections>), which are units that specialize in specific areas of interests within fisheries. Some examples of AFS disciplines are Fisheries Management, Marine Fisheries, Bioengineering, Fish Habitat, Socioeconomics, Introduced Fish, and International Fisheries. These sections provide an opportunity for fisheries professionals and students to communicate with others that are in their area of specialization. Sections play an active role in the fisheries community by sponsoring workshops, symposia, continuing education courses, and travel awards to AFS annual meetings. They also publish newsletters and websites. The International Fisheries Section

even formulated and led annual meetings of the World Fisheries Congress.

Membership – To become a member or to renew your membership, please go to the Parent Society website at <http://fisheries.org/membership>. There you can join the Society, the Alaska Chapter, and any discipline sections that strike your interest. To become a Lifetime Alaska Chapter member, you will need to first become a Society lifetime member through the online system. To add your Lifetime Alaska Chapter membership, please contact the Chapter Treasurer, Lee Ann Gardner, at rwjconsulting@ak.net.

Understanding Beaded Streams, continued



Stream-width PIT tag antenna in May 2013 set up while Crea Creek was still frozen, and in June 2013 (inset) after break-up. Photo by Lauren Flynn.

(>18 cm fork length). Stickleback accounted for about 90% of the stomach content mass of all Grayling sampled, with up to 70 Stickleback in individual stomachs. This degree of piscivory is unprecedented in the Arctic Grayling literature and is likely driven by high abundances of Stickleback. Furthermore, Stickleback have a high

energy content, being composed of roughly 20-25% lipids, whereas macroinvertebrates are generally less than 20% lipids. A Grayling would need to eat quite a disproportionate amount of midge larvae to acquire the same amount of calories provided by a single Stickleback! Additionally, the morphology

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Understanding Beaded Streams, continued

of beaded streams is conducive to capturing Stickleback; we observed Grayling aggressively defending the position closest to a pool inlet where downstream moving schools of Stickleback were intercepted. In this manner, Grayling hold positions and drift feed on a steady flow of macroinvertebrates, but ambush downstream moving Stickleback as they pass. Grayling <18 cm fork length also consumed Stickleback, but depended more heavily on macroinvertebrates than did adults.

Juvenile Grayling, in contrast to adults, often spent the entire summer in the Crea Creek drainage, only departing in late September when temperatures plummeted towards freezing. While our data indicated that juveniles use both beaded stream reaches and flow-through lake habitats (the Crea Creek drainage includes four large flow-through lakes), a considerable number of fish spent the entire summer in one large but very shallow (< 1.5 m) lake that freezes solid by mid-winter. We believe the heavy use of this lake is related to warm, early-season temperatures and heavy littoral vegetation that promotes macroinvertebrate production. This information provides an example of the significance of Arctic shallow lakes as fish habitat: these lakes have often, incorrectly, been considered as unimportant due to lack of overwintering habitat.

We explored the timing of outmigration from Crea Creek at the population and individual levels. Among adult fish, which generally migrated by mid July, we found that decreasing stream flow best predicted adult migration timing. However, there was no strong correlation between migration date and adult size. Migration of juveniles had a more complex association with environmental variables; flow, temperature, year, and season



The stomach contents for one Arctic Grayling from Crea Creek consisted of over 70 Ninespine Stickleback and five caddisflies. Photo by Jason McFarland.

influenced the daily number of fish leaving the stream. As fall approached, several strong dips in temperature clearly led to “pulses” of juvenile fish moving out of the stream. Temperatures approaching 0°C may indicate stream connectivity to overwintering habitat is soon to be lost due to ice formation, and fish may be cued to this environmental indicator. Among individual juveniles, we found that body size and relative condition influenced migration timing (Heim *et al.* 2014). By “risking” later migration, smaller fish and those in poor condition spent additional time in Crea Creek foraging and could accumulate additional lipid reserves for winter. Larger juveniles and those in good condition presumably reached a threshold level of lipid reserves needed to endure the long overwinter period; therefore, early migration reduced risk for accessing overwintering habitat.

One of the reoccurring themes within this work is the importance of stream connectivity. Like hundreds of other beaded streams in Alaska, Crea Creek is available only seasonally to migratory fish, and the presence and strength of a stream connection to overwintering habitat is highly variable over time. For example, two upstream lakes within the Crea Creek drainage are rich in forage but stream connectivity is present only during the spring flood. Because

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Understanding Beaded Streams, continued

of the limited connection, Grayling relative abundance in these lakes is dramatically reduced compared to well-connected habitats downstream. Trevor Haynes, a UAF postdoctoral researcher, demonstrated that stream connectivity was one of the most important variables determining Arctic Grayling occupancy in tundra lakes (*Haynes et al. 2014*). Ongoing research by UAF Ph.D. student Sarah Laske is building upon this work by addressing the influence of aquatic connectivity on fish species assemblages and food webs, and should provide exciting new insights into the role of aquatic connectivity in Arctic freshwater fish ecology.

Recognizing the importance of seasonal connectivity for resident freshwater Arctic fishes, we should make a concentrated effort to maintain this connectivity, particularly in small, seemingly unimportant aquatic habitats like beaded streams. As petroleum development expands across the Arctic Coastal Plain, fish access to ephemeral streams should be considered in road and structure construction. Connected shallow lakes may serve as important summer foraging grounds for migratory Arctic fish, and should be given similar consideration. Furthermore, as climate change continues to exert influence on Arctic hydrology, the contemporary extent and seasonality of aquatic connectivity is likely to change in ways difficult to predict. Continued research is needed to address these growing concerns. Beaded streams and aquatic habitats of the Arctic Coastal Plain are truly unique. They provide an ecologically rich, yet poorly understood, ecosystem for



Kurt Heim with an Arctic Grayling captured and PIT tagged in Crea Creek. Photo by Lauren Flynn.

scientific investigation. Ongoing and future work in this region are sure provide a deeper understanding of the ecological importance and function of the Arctic aquatic landscape, as well as address deeper questions in ecology.

Kurt Heim received his M.S. from UAF in 2014 and is currently pursuing a Ph.D. at Montana State University studying the spread of Rainbow Trout hybridization with native Cutthroat Trout in the Lamar River drainage in Yellowstone National Park. 🐟

Alaska's Boating Safety Program Getting Results

The Alaska Legislature adopted HB108 in 1988 to establish a boating safety program within the state of Alaska. Some of the components subsequently added as part of the safe boating program include Kids Don't Float, the free boating course Alaska Water Wise, and Pledge to Live. Improved education and awareness through this and other programs has had an impact as recreational boating deaths have dropped 80% since adoption of HB108. However, the demographics for fatalities remain the same: 90% of the victims are men; 90% occur in boats under 26 feet; and location is evenly split between salt water and fresh. For more information visit the *Office of Boating Safety*. 🐟

Student Subunit Happenings

Morgan Sparks

The mild winter of 2014 and 2015 had the Fairbanks student subunit outside with burbot setline fishing as well as a planned March ice fishing trip. Professional activities included the continuation of the under-ice blackfish capture-mark-recapture project and hosting speakers on subjects ranging from Yukon River SONAR enumeration to the SFOS dean search committee. With spring fast approaching, the subunit is looking to continue with its outings and research and bring in a new group of leadership with elections held this April.

While other units did not have specific updates to report, the Alaska Chapter had two students, Jane Sullivan and Natura Richardson, at the AFS Western Division Student Colloquium, which was held Utah State University this

February. Jane, apart from her research out of Lena Point in Juneau as a graduate student, is also the Western Division Student representative and Natura is a graduate student who works and lives in Kodiak. Below we've included a short description of the event provided by Natura Richardson, who was able to travel to the event in part by funding approved by AFS Alaska Chapter Executive Committee.



Students gather after sessions in the backyard of the Utah State University Bear Lake Training Facility. Photo by Natura Richardson.

Natura Richardson, M.S. Student, University of Alaska:

Did you know that Bear Lake in Northern Utah contains so much calcium carbonate that it's like a liquid Tums antacid tablet? I didn't either before I met Scott Tolentino, the state fisheries biologist for Bear Lake. Scott shared this little tidbit along with his wealth of knowledge on Bear Lake ecology, endemic fishes of the lake, and the research and management he conducts within the watershed. Scott was one of several professionals I met this February while attending the AFS Western Division Student Colloquium on the beautiful shores of Bear Lake, Utah. Thanks to the Alaska Chapter Executive Committee, I was given the opportunity to attend the conference with 25 other fisheries students that hailed from Colorado, Utah, Wyoming, Idaho, and Alaska. Jane Sullivan, Western Division AFS student representative, and Stephen Klobucar, AFS Utah State Subunit president, organized the three-day event, which was hosted by Utah State University. Being a distance student in Kodiak can geographically remove me from opportunities that Fairbanks, Juneau, and lower 48 students receive. The student colloquium was a great event for me to attend and receive some of those opportunities.

At the student conference there was a full day of workshops dedicated to communicating your research in a clear, succinct, but exciting manner. I especially enjoyed the workshop on message boxing taught by Jereme Gaeta, the new faculty member at Utah State. This workshop and Jereme's enthusiasm helped me find greater insight into the "bigger picture" of my research and taught me how to deliver that message to a variety of people or audiences, not just fellow scientists.

The colloquium also provided workshops on applying for federal jobs, tips for gaining employment, and professional development. I was introduced to speed-mentoring, where we had short fifteen-minute conversations before the next mentoring rotation occurred. After the structured sessions, students could

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Student Subunit Happenings, continued



Natura Richardson works with Utah State University professor Jereme Gaeta practicing interviews, or the “elevator speech,” through the Message Box approach. Photo by Jane Sullivan.

then go back and talk further with those whom they had a greater interest or connection. Students were able to network with local professionals from Trout Unlimited, Utah Department of Wildlife Resources, and the U.S. Forest Service.

The last day of the conference was dedicated to student presentations. Because I was one of

only two Alaskan students, most of the talks were on subjects that I have very little exposure to. I spoke on my Master’s research and used this as an opportunity to practice for my upcoming thesis defense and to inform students from other universities of the research that is taking place within Alaska. Because it was a student conference, the presenting session was less formal with time allocated after each presentation for feedback. This verbal feedback, along with written feedback was extremely useful for students, like myself, who are preparing to enter the professional world.

The Alaska AFS Executive Committee sponsored me to attend the colloquium. I am most grateful that the Alaska AFS Chapter not only has the financial capabilities to do this but also sees the value in investing in our students. By attending this conference, I was able to build out of state networks, receive mentorship, and practice presenting and receive feedback. Thank you Alaska AFS! 🐋

Summer of Sharks

A new exhibit on sharks is open April 17 – Sept 17 at the Alaska SeaLife Center (ASLC) in Seward. This is a traveling exhibit assembled by the Idaho Museum of Natural History in collaboration with Ketchikan’s Ray Troll. Portions of the ASLC will be transformed into the Paleozoic marine world with fossils, sculptures, and artwork featuring *Helicoprion*, a long-extinct species having lower jaw with teeth oriented in a whorl, similar to a circular saw. In addition to four fossils of the shark’s whorl dentition obtained from Idaho phosphate mines, the exhibit includes artwork in an 8-ft x 17-ft shark mural and 21 individual pieces from Troll, as well as sculptures by artist Gary Staab. 🐋



Sculpture of the prehistoric Helicoprion shark on display during April 17 – Sept 17 at the Alaska SeaLife Center in Seward. Photo from Alaska SeaLife Center.

Did You Know?

Creation of the Student Subunit of the Alaska Chapter

Randy Brown, Chapter Historian, and James Reynolds, Chapter Historian Emeritus

What is now the Student Unit of the Alaska Chapter American Fisheries Society (AFS) originated as the Arctic Unit in February 1987, following a vote of approval by the membership at the business meeting in November 1986. The Arctic Unit was based at the University of Alaska Fairbanks (UAF) and was described as a geographic element of the Alaska Chapter composed of members living north of the Alaska Range. Even though most or all of the original members were students, the original wording did not limit Unit membership to university students. Immediately following its formation, the Arctic Unit prepared a resolution expressing their concern for fishery resources in the Arctic National Wildlife Refuge given the potential for oil development on the coastal plain. This resolution was submitted for approval or comments to the Alaska Chapter AFS membership in the summer 1987 issue of *Oncorhynchus*. The AFS Alaska Chapter membership embraced the resolution and forwarded it for consideration by the membership of the AFS Parent Society, where a slightly amended resolution was approved at the annual business meeting in North Carolina in September 1987. This was a tremendous accomplishment for a fledgling Subunit of the AFS Alaska Chapter.

The Arctic Unit evolved to become the Student Unit, with a statewide focus and voting membership limited to students, primarily because of a desire for student representation on the Executive Committee of the AFS Alaska Chapter. During the 1992 Chapter business meeting, a motion was put before the Alaska Chapter membership to change the Bylaws to include the President of the Arctic Unit as a voting member of the Executive Committee. There was general agreement among the membership that student representation on the Executive Committee would be a good way to promote student involvement in the Chapter, but there were concerns that the Arctic Unit did not adequately represent "Students" throughout the geographic region of the Alaska Chapter. There was also concern that, in the future,

students on each of the other other Alaskan campuses might also pursue subunit formation and formal, independent representation on the Chapter Executive Committee. It was suggested to members of the Arctic Unit that they reclassify their membership as a statewide student organization before reintroducing their motion for representation on the Chapter Executive Committee.

By April 1993, the Arctic Unit of the Alaska Chapter AFS had amended its bylaws such that its membership may include anyone; however only AFS student members enrolled at Alaskan universities could hold office or vote on issues before the Unit. Additionally, they changed their name to the Student Unit of the AFS Alaska Chapter. Over the next couple of years the Student Unit and the broader Alaska Chapter membership worked through the many administrative challenges necessary to formally recognize the Student Unit and include the Student Unit President as a voting member of the Chapter Executive Committee. Final approval by a two-thirds majority vote of the Alaska Chapter membership was achieved at the annual business meeting in November 1995. The language of the Student Unit Bylaws that were adopted in 1993, while inclusive of student members throughout the State, spoke of a single organization based at the University of Alaska in Fairbanks. The Student Unit Bylaws were eventually amended in 2001 to address the structure of the Student Unit as an organization based at multiple campuses, each with their own set of officers. ?

ONCORHYNCHUS

Oncorhynchus is the quarterly newsletter of the Alaska Chapter of the American Fisheries Society. Material in this newsletter may be reprinted from other AFS websites.

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Deadline for materials for the spring issue of *Oncorhynchus* is June 10.

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UAS Students at the Federal Subsistence Board meeting in Anchorage. *Photo from U.S. Forest Service.*

Alaskan Students Get Experience in Fisheries Policy

Joel Markis

Seven students from the University of Alaska Southeast (UAS) Fisheries Technology program recently received a unique, hands-on experience in fisheries policy determination. Students attended the Federal Subsistence Board (FSB) meeting in Anchorage where they examined fisheries proposals, witnessed testimony and deliberation, and learned about fisheries policy. The FSB meets annually to decide subsistence issues on Federal public lands and waters in Alaska. Fisheries issues are deliberated during odd years and wildlife issues on even years.

This is the third year UAS has brought students to view the proceedings. Each student selects and follows an FSB proposal that has relevance to their community or involves a fishery they are interested in. A daunting process to the uninitiated, the students are mentored each year by U.S. Forest Service subsistence biologists Terry Suminski and Justin Koller who led them through the process from proposal to decision. This year students experienced two landmark decisions regarding subsistence fisheries resources. First, the board authorized subsistence users from the community of Ninilchik to use a single gillnet on both the Kenai and Kasilof Rivers. The FSB also restricted the harvest of herring and herring spawn in Federal public waters near Sitka. Both of these decisions were heavily deliberated and provided a great opportunity for students to gain an understanding of the Federal board process and how proposals are generated, amended, and ultimately decided.

Partnering by UAS, the U.S. Forest Service, and the National Institute of Food and Agriculture brought students from a variety of communities and fisheries backgrounds to participate in the three day meeting. Students took away an understanding of the board process and how fishery policy impacts not only their lives, but others in their communities. Plans are already in place for next year to support students from rural communities across Alaska, including students enrolled in the Tribal Management degree program, to attend and follow the process for decisions on managing wildlife.

For more information on the Federal Subsistence Board, contact Deborah Coble (FSB; 786-3880), Joel Markis (UAS; 747-7760), or Jan Straley (UAS; 877-465-4827). 🐟

Matanuska-Susitna Borough Wins National Fish Habitat Award

The Matanuska-Susitna Borough (MSB), Alaska was named co-recipient of the 2014 National Fish Habitat Award for Extraordinary Action in Support of Fish Habitat Conservation. The award was presented at the National Fish Habitat Board meeting on November 5 in Washington, DC. This was the sixth year the National Fish Habitat Awards have been handed out, recognizing outstanding achievements in Fish Habitat Conservation. The MSB staff and departments were recognized for exceptional leadership is making substantial and positive contributions to fish habitat conservation in the MSB – from filling gaps in geospatial and habitat information, implementing fish passage projects, and protecting habitat, to adopting plans and policies to prevent future habitat impacts. Examples of conservation actions included:

(1) Restoration - Partnering with the U.S. Fish and Wildlife Service and the state to raise \$6 million to remove 81 fish passage barriers at road-stream crossings.

(2) Prevention - Developing local wetlands and storm water management plans and assisting with completion of a functional wetlands assessment to help the MSB grow with minimal impact on water quality and fish habitat; obtaining MSB Assembly approval of an ordinance requiring road-stream crossings to be designed to pass fish and mirror natural channel functions; and obtaining LiDar and aerial imagery for 3,450 square miles of the MSB to help assess fish habitat.

(3) Funding - Prioritizing salmon research and fish passage in annual state legislative funding requests; and successfully securing \$2.5 million in 2014 in order to help match USFWS and State funds supporting fish passage and related habitat improvements. 🐟



(l-r) David Wigglesworth (USFWS Coordinator for FHPs in Alaska, Kelly Hepler (National Fish Habitat Partnership Chair), and Roger Harding (ADFG Coordinator for FHPs in Alaska) recognize the Matanuska-Susitna Borough. *Photo from Roger Harding.*

2015 Annual Meeting of the Alaska Chapter of the American Fisheries Society

The 2015 meeting of the AFS Alaska Chapter will be held at “The End of the Road” in Homer, Alaska during November 2-6 at the Alaska Islands and Oceans Visitor Center. The working theme is: *Alaska’s Fisheries at a Crossroads: From the Past, Looking to the Future*. We welcome ideas for session topics that fit into a conference-wide theme of sustainability (economy, ecosystem, and management), and especially encourage presentation of long-term datasets. Alaska has many valuable long-term datasets and creative, motivated fisheries professionals. The conference will strive to highlight the importance of adaptive thinking to anticipate and respond to future scenarios involving climate change, developing fisheries, and changes in subsistence patterns, for which past datasets provide a context but may have diminishing predictive capabilities. We are also seeking input from members on potential continuing education classes that will help you develop as an aquatic professional (see notice in this newsletter).

In addition to the traditional social events and poster session, awards banquet, and excellent keynote speakers, we hope to incorporate a speed talks session, a possible freshwater fish vs. marine fish curling or hockey event (anadromous fish, you can choose your side), and mentoring and outreach to the Homer youth community. Local talent will be featured for our artwork, banquet presentations, and banquet music. For those arriving early or staying late (it will be “First Friday”), several side options are under discussion such as an art gallery walk, winter king salmon fishing, or tours of the brewery or winery. Given the enthusiasm and resourcefulness of the Local Arrangements Committee, it promises to be a fun and memorable meeting. For more information or to offer suggestions, contact Program Chair Mary Beth Loewen (Marybeth.loewen@alaska.gov 486-1805). See you in Homer! 🗨️

Eugene Maughan Graduate Student Scholarship, AFS Western Division

The Western Division is pleased to announce that applications for its graduate-level student scholarships are now being solicited. This scholarship program provides up to \$5,000 annually in scholarships to masters or doctoral students in the general area of fisheries science with one to three awards to individual students. Beginning in 2002, the Sustainable Fisheries Foundation established the William Trachtenberg Memorial Scholarship Fund, which augments the Western Division scholarship program. This fund provides up to \$600 annually to a graduate-level student conducting studies on fisheries sustainability. Applications for the Western

Division scholarship program will automatically be considered for the Sustainable Fisheries Foundation scholarship program as well. An award committee of five fisheries scientists from the Western Division will make the decision regarding the award of scholarships from both programs. The 2015 scholarships will be awarded at the WDAFS annual meeting in Portland, Oregon, August 16-20, 2015. The application package should be sent (postmarked) no later than May 1, 2015. For more information, contact Bob Gresswell, Western Division Scholarship Award Committee, bgresswell@usgs.gov. 🗨️

Continuing Education Workshops

The Continuing Education Committee was established to provide training that will improve and expand the knowledge and skills of Alaskan biologists so that they can become more effective stewards of fishery resources and fish habitats.

It is time again to think about your continuing education needs and what classes should be offered at the annual Alaska chapter AFS meeting. This year the Continuing Education Committee co-chairs are Sara Miller (465-4245; sara.miller@alaska.gov) and Katie Palof (465-4226; katie.palof@alaska.gov). Feel free to email or call them with any ideas for classes or possible instructors. 🗨️

Backpack Electrofishing Course

Northwest Environmental Training Center (NWETC), a Washington State-based, non-profit organization dedicated to environmental education, announces a course in Backpack Electrofishing to be held in Anchorage, Alaska during June 9–11. The course will include classroom work on the first and third days and field exercises on the second day. For additional course information and registration, visit nwetc.org. Technical questions about course content should be directed to instructor Jim Reynolds at jbreyolds@alaska.edu. 🗨️

2015 Call for Chapter Award Nominations Extended to April 30

Theresa Tanner and Kenneth Gates

The Alaska Chapter is currently soliciting nominations for the Meritorious Service Award (MSA), the Chapter Service Award (CSA), the Almost Darwin Award, and the Wally Noerenberg Award for Fishery Excellence. We encourage all members to consider deserving individuals and to submit nominations for these awards. Please use the form at <http://www.afs-alaska.org/awards-scholarships> to make your nominations. Award presentations from this call will occur at the 2015 Chapter Annual Meeting. **NOMINATIONS MUST BE SUBMITTED BY APRIL 30, 2015.**

Nominations for the MSA can be based on an outstanding contribution in any area of Alaska fisheries, including research, management, education, planning, industry, and policy development. Nominations do not have to come from AFS members, nor do nominees need to be active members. The contribution or accomplishment of the candidate must be recent and not the result of many years of effort; recognition of career-long contributions is more appropriate for the Wally Noerenberg Award. The Awards Committee will select winners based on strength of the nomination and the accomplishment.

The CSA was established to award outstanding service to the Alaska Chapter of the American Fisheries Society. These candidates have been involved in some or all of the following activities: active participation in standing or ad hoc committees; made important contributions to advance the current objectives, long-term goals or stature of the Chapter and fisheries professionals; contributed a significant amount of time to Chapter activities; improved public awareness of the Alaska Chapter and Chapter activities; encouraged development of students as fisheries professionals through recruitment and involvement as Chapter members; and recruited fisheries professionals as Chapter members. Submit MSA and CSA award nominations and letters of support for nominations to Theresa Tanner, USFWS, 605 W 4th Ave., Rm G-61, Anchorage, 99501, 271-1799, theresa_tanner@fws.gov.

The Almost Darwin Award recognizes the most humorous and outrageous fisheries faux pas of any fisheries professional. The nominees must have committed the faux pas within the last calendar year. Please include a photo of proof along with the story. Submit award nomination stories and photos to Theresa Tanner at the above address.

The Wally Noerenberg Award for Fishery Excellence, the highest award of the Alaska Chapter, is bestowed as a special honor on individuals who have made great and outstanding contributions to Alaska fisheries. This award was established in 1981 by resolution of the membership. The membership has also set, by resolution, specific guidelines for the Wally Noerenberg Award Committee. Nominee contributions may include scientific research; technological development; species and habitat management; innovations in harvesting, processing, or marketing; academic and fishery education; or involvement in national and international affairs affecting Alaska fisheries. Submit Wally Noerenberg Award nominations and letters of support for nominations to Ken Gates, USFWS, Kenai Fish and Wildlife Field Office, 43655 K-Beach Road, Soldotna, AK 99669, 260-0126, kenneth_gates@fws.gov.

Rewarding excellence is an enjoyable but challenging task and finding judges is a challenge too. The Chapter is seeking members for the Awards Committee. If you are interested in helping on this committee, please contact Theresa Tanner at theresa_tanner@fws.gov or 271-1799. The application form for the 2015 Chapter awards is available via the "Awards" link at: <http://www.afs-alaska.org/awards-scholarships>. ?

Mat-Tsunamis Win Alaska Region Ocean Sciences Bowl

The Mat-Tsunamis, a team of five students from the Mat-Su Career and Technical High School in Wasilla, have won the 18th annual Alaska regional competition of the National Ocean Sciences Bowl. The Mat-Tsunamis broke the eight year winning streak of Juneau Douglas High School, whose two teams placed third and fifth out of 20 teams. The Mat-Tsunamis will join other regional winners for the national competition in Ocean Springs, Mississippi, on April 23–26, 2015. Alaska Sea Grant has been a sponsor and contributor for the Alaska competition over its 18-year duration. Visit the National Sciences Bowl website at <http://seagrant.uaf.edu/nosb/index.html> for more information and complete results. ?

Meetings and Events



Flow 2015

April 28–30, 2015: This, the Third International Workshop on Instream Flows, will be held in Portland, Oregon. More information is at <http://www.instreamflowcouncil.org/flow-2015/>.

HACCP Workshop

May 7–8, 2015: The workshop to help Alaska seafood processors learn to set up and carry out the federally mandated HACCP program will be held in Kodiak. For more information, contact Chris Sannito at csannito@alaskan.com.

Tools and Strategies for Assessment and Management of Data-Limited Fish Stocks



May 12–15, 2015: This 30th Lowell Wakefield Fisheries Symposium will be held in Anchorage. More information is at <http://seagrant.uaf.edu/conferences/2015/wakefield-data-limited/>.

Economic Sustainability, Fishing Communities, and Working Waterfronts

May 20–22, 2015: This biennial forum of the North American Association of Fisheries Economists will be held in Ketchikan. For more information see <http://seagrant.uaf.edu/conferences/2015/naafe/>.



145th Annual Meeting of the American Fisheries Society

August 16–20, 2015: This meeting will be held in Portland, Oregon. For more information, see <http://fisheries.org/afs-2015>.



Annual Conference of the Alaska Chapter of American Statistical Association

August 25–27, 2015: This conference, to be held in Anchorage, will feature a two-day workshop “Generalized Additive Models and Their Extensions: the Penalized Regression Spline Approach in R” (Simon Wood of the University of Bath). For more information, visit [2015 AK ASA Meeting](#). The conference contact is Anna-Marie Benson (Anna-Marie_Benson@fws.gov).



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Feel free to contact the Executive Committee members.