

The American Fisheries Society Genetics Section Newsletter

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President's Message

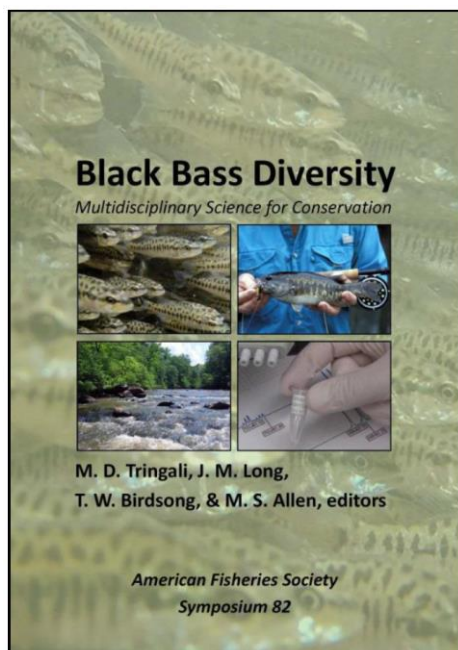
I just have a couple things for this winter's newsletter. First I would like to thank everyone that renewed their Section membership for 2015 or joined the Section for the first time. Your section dues are used primarily to support our student awards including travel to AFS and other fisheries-related meetings. If you have not yet renewed for 2015 please consider



Dr. Jeffrey Olsen, AFSGS president.

doing so. You can find the membership options on the Section's website (<http://genetics.fisheries.org/membership/>) or go directly to the AFS membership webpage (<http://fisheries.org/membership>). The national AFS meeting is in Portland this summer, August 16-20. I hope you will be able to attend and I encourage you to take a look at the 100 plus planned symposia (<https://afs.confex.com/afs/2015/webprogrampreliminary/SYMP.html>). The Genetics Section is sponsoring a day-long symposium titled "Genomics of Adaptation in Natural Populations". In addition, there are other genetics-themed symposia including "Effects of Hatchery Fish on Wild Populations of Pacific Salmon and Steelhead: 20 Years Later, What do We Really Know?", "Taxonomic and Evolutionary Biology of Cutthroat Trout", "Utilizing Genetics to Accomplish Conservation Goals in Hatcheries". It's not too late to submit abstracts for contributed papers and posters (<http://2015.fisheries.org/call-for-papers/>). Abstracts are due March 13. Finally, I would like to hear from any graduate students, post-docs, and young professionals interested in writing a short (around 500-1000 words) article describing any application of genetic methods and data in fisheries conservation. The target audience is the general fisheries community and the paper would be published in the AFS journal "Fisheries". Students contributing papers in the past have described environmental DNA (Jones 2013, Fisheries 38(7): 332-333) and parentage-based tagging (Larson 2014, Fisheries 39(2):58. This is great opportunity to publish in a widely read fisheries journal and to spread the word about the many uses of genetic data. Feel free to contact me at jeffrey_olsen@fws.gov.

Book Announcement



The trilogy of black bass symposium is now complete. The latest book in the series dedicates 47 chapters to the biological, ecological, genetic, and management concerns of endemic basses within the gens *Micropterus*, with special

emphasis on their conservation needs. Despite their geographically restricted natural ranges and unique life histories, many of these basses have garnered little attention from scientists over the years – more research studies have been completed within the last ten years than in the previous one hundred! Much of the knowledge gained from this recent work is presented in the new book.

Prior to the 2012 symposium, only nine species of black bass were recognized across North America. However, in 2013, several new basses were advanced in the literature as species candidates, e.g., Warrior Bass and Chattahoochee Bass. In the book, three additional cryptic taxa – i.e., the Choctyaw Bass, Bartram's Bass and the Cuato Ciénegas Bass – are characterized with molecular and/or morphological techniques. Threats to the diversity and genetic integrity of these and other endemic black basses, caused by fish introductions and subsequent hybridization, are also detailed.

Multiple conservation and habitat restoration projects are highlighted for vulnerable populations of Guadalupe, Shoal, and Redeye Bass in their native

stream habitats. As detailed in *Black Bass Diversity: Multidisciplinary Science for Conservation*, several black bass species have real conservation needs that must be addresses to prevent them from going extinct.

Announcements will be made this spring on the AFS List Serve, Website, and Newsletters when the book becomes available.

In addition to the hard copy books, AFS will offer pdf downloads of individual book chapters.

Online:

<http://fisheries.org/bookstore>

If you prefer not to order online, please contact Books International **Phone:** 703-661-1570 **Email:** bimail@presswarehouse.com

Reminder



AMERICAN FISHERIES SOCIETY
**PORTLAND
OREGON**
145TH ANNUAL MEETING
AUGUST 16-20, 2015

Deadline for submittals is
March 13, 2015!

Visit 2015.fisheries.org
to view accepted symposia

Calendar

FEBRUARY 2015

24th-27th Meeting. Montana Chapter AFS Annual Meeting. Great Falls, MT.

28th Abstracts due. The International Symposium on Genetics in Aquaculture (ISGA) XII. Santiago de Compostela University, Spain.

MARCH 2015

1st Registration closes. Early bird registration closed for SMBE annual meeting.

1st Application deadline. International Women's Fishing Association scholarship.

2nd Application deadline. Marine Resources Population Dynamics Summer Program. University of Florida and Florida Keys.

13th Abstracts due. For contributed sessions and symposia at the 145th annual American Fisheries Society meeting. Portland, Oregon.

15th Application deadline. Sigma-XI Grants-in-Aid of Research.

15th Application deadline. George Burlew Scholarship. Manasquan River Marlin & Tuna Club.

27th Abstracts due. Woods Hole Immunoparasitology Conference. Woods Hole, MA.

29th Abstracts due. Poster presentation. Annual SMBE meeting.

APRIL 2015

3rd Registration closes. Woods Hole Immunoparasitology (WHIP) Conference. Woods Hole, MA.

19th – 22nd Workshop. Woods Hole Immunoparasitology (WHIP) Conference. Woods Hole, MA.

JUNE 2015

21st Registration closed. Online registration. Annual SMBE meeting.

JUNE 2015

21st-27th Meeting. The International Symposium on Genetics in Aquaculture XII. Santiago de Compostela University, Spain.

22nd-24th Meeting. Fish Passage 2015-International conference on river connectivity best practices and innovations. Groningen, the Netherlands.

JULY 2015

6th – 8th Workshop. Marine Resources Population Dynamics Summer Program. University of Florida and Florida Keys.

12th-16th Meeting. Annual SMBE Meeting. Hofburg Palace, Vienna, Austria.

15th-19th Meeting. ASIH Annual Meeting. Reno, NV.

AUGUST 2015

16th-20th Meeting. 145th National American Fisheries Society. Portland, Oregon.

SEPTEMBER 2015

15th Application due. George Burlew Scholarship. Manasquan River Marlin & Tuna Club.

NOVEMBER 2015

8th -12th Meeting. 23rd Biennial CERF conference: Grand Challenges in Coastal & Estuarine Science: Securing Our Future. Portland, OR.

Please send information on symposia, jobs, articles, and calendar events to Joy.Young@myfwc.com to see it published in the next newsletter!

Courses and Workshops

Ninth Annual Marine Resources Population Dynamics Summer Program

6th – 8th July, 2015

University of Florida campus and Florida Keys

Presented by the National Marine Fisheries Service, the University of Florida, Sea Grant and Florida Fish & Wildlife Conservation. The University of Florida, National Marine Fisheries Service, Florida Sea Grant and Florida Fish & Wildlife Conservation present their redesigned Marine Resources Population Dynamics Summer Program. This twelve-day workshop, all expenses-paid program will have participants work with an Ecopath with Ecosim model to explore management options for invasive lionfish populations. Experience with population modeling or lionfish population is preferred but not essential. Participants will meet at the University of Florida Campus where the workshop will be held and also travel to the Florida Keys. Selected students will have all expenses paid; including travel, housing, meals, supplies, etc.

Students who are currently enrolled or have recently completed their Masters or Bachelor's degree or are a PhD student are encouraged to apply. The workshop is intended for students with strong quantitative interests and extensive research experience, striving for a career in population dynamics. Applications are now being accepted for the competitive selection process. Interested individuals should visit the website <http://sfrc.ufl.edu/fish/rtr/workshops/> or call (352) 294-0886 for more information or application materials.

Genomics of Adaptation in Natural Populations

Date tba 145th Annual AFS Meeting

Portland, Oregon

Rapid advances in genomics are providing unprecedented opportunities to improve our understanding of the amount, distribution and functional significance of genetic variation in natural populations and its dynamics over ecologically relevant time. At the same time that analyses on a genomic scale are becoming commonplace, complete genome sequence is increasingly available for many species, facilitating discovery of loci associated with adaptation and, at times, also the causal variants shaping adaptive phenotypes. There is great promise for identifying adaptively important genes with genomic techniques, but challenges still exist in treating confounding effects of environmental heterogeneity, genetic drift, and gene by environment interactions. In this symposium we will examine our current knowledge of functional genomic variation, identify gaps in our understanding, and explore future implications of this state of knowledge for conservation of fishes. The contributors will also explore the promise as well as the limits of genomics as applied to conservation and management of fishes around the globe. In doing so we seek to identify current and future impacts of genomics in documenting and helping to stem the widespread loss of genetic and genetically based phenotypic diversity in the wild. Moderators: *Garrett McKinney, Morten Limborg and Jeff Olsen*

Chair: *Jim Seeb*

Organizers: *Garrett McKinney, Morten Limborg, Jim Seeb, Lisa Seeb and Jeff Olsen*



Courses and Workshops

Utilizing Genetics to Accomplish Conservation Goals in Hatcheries

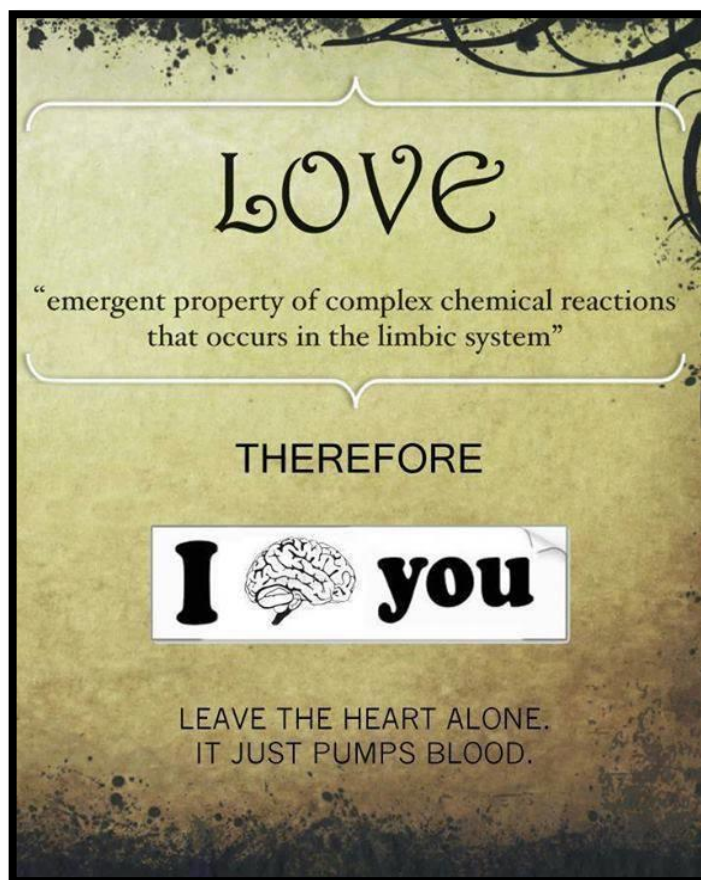
Date tba 145th Annual AFS Meeting
Portland, Oregon

Conservation hatcheries are generally founded in order to mitigate the loss of wild stocks. However there has been much debate over whether or not the demographic and genetic consequences of using a conservation hatchery outweighs the potential benefits, as hatchery personnel are inevitably required to balance often disparate goals such as production and domestication. In order to reduce the risk of negative consequences, conservation hatcheries often employ genetic management, with the goal of reducing 1) inbreeding within the hatchery, 2) divergence from wild population, and 3) negative genetic effects on the wild population if hatchery fish are released into the wild. This symposium aims to discuss different genetic management techniques in different hatchery settings, and how genetic management has been applied to and/or affected hatchery and wild populations. We encourage discussion of both failures and successes, as well as discussion of genetic management of non-salmonids. Tentative speakers:

- Andrea Schreier - "The importance of post-release genetic monitoring in conservation aquaculture"
- Mandi Finger "Genetic Consequences of 7 years of delta smelt genetic management in a conservation hatchery"
- Gregory Moyer "Developing a translocation risk-assessment framework for aquatic organisms of the southeastern United States"
- Chris Hollenbeck "Genomics studies of restoration enhancement of red drum (*Sciaenops ocellatus*) in Texas bays and estuaries"
- Stewart Grant "Responsible genetic approach to stock enhancements, stock restorations and sea ranching of marine fishes and invertebrates"

Organizer: Mandi Finger

Romantic comics



Reprinted from IFLScience

Jobs

Graduate positions

Graduate Studies in Integrative Biology. Graduate student opportunity in evaluating hybridization amongst native river turtle populations at Virginia Commonwealth University. **Program summary:** The Dyer (<http://dyerlab.bio.vcu.edu/>) and Vonesh (<https://wp.vcu.edu/voneshlab/>) labs at Virginia Commonwealth University have an opening beginning fall 2015 for a Master's student interested in examining the issue of hybridization amongst Northern Red-Bellied Cooter (*Pseudemys rubriventris*) and Eastern River Cooter (*Pseudemys concinna*) populations in Virginia. The student will be use morphometric and genetic analyses, with both existing and field collected datasets, in addressing this question. **Application deadline:** The student is expected to begin the collection of field data beginning May 25, 2015, with a provided stipend, until the commencement of the fall semester on August 19, 2015. Position dependent upon anticipated funding for research and applicant applying for and being awarded a graduate teaching assistantship in the MS Biology program. **Qualifications:** B.S. in Biology, Ecology, or related field Ability to perform fieldwork in difficult conditions including being able to lift 50lbs without strain. Background knowledge of boats and their engines G.P.A exceeding 3.5 with GRE scores at or above the 70th percentile. **To apply:** Please submit the following to Dr. Rodney Dyer (rjdyer@vcu.edu): CV including both G.P.A and GRE scores, Statement of research interests, Names and contact information of 3 professional references.

PhD Graduate Assistantship. Memorial University of Newfoundland, St. John's. **Application deadline:** Until filled. **Salary:** \$21,200 per year (4 years). **Project summary:** Evolutionary and ecological impact of the escape of farmed salmon. To quantify the potential viability of crosses of wild salmon with North American- and European-origin farm salmon, by comparing functional traits and behavioural interactions among offspring (pure and hybrid) from the crosses. Furthermore, using a combination of

microarray and RNA-seq-based transcriptome analyses (in collaboration with Dr. Matt Rise), assess differences in genetic expression. A replicated experimental release of offspring of wild salmon and NA-origin farm salmon (pure and hybrid) will also occur. **Qualifications:** MS, GPA 3.2+. Training in fish ecology and behaviour, population genomics and fish rearing and; be capable of designing and undertaking both field and laboratory research. Send CV, transcript copies, 3 refs (names). **To apply:** ifleming@mun.ca or ibradbur@me.com Visit at: <http://www.mun.ca/osc/ifleming/index.php>

M.S. Graduate Research Assistantship. The Oklahoma State University, OK Cooperative Fish and Wildlife Research Institute, seeks a master's student. **Application deadline:** Until filled. **Salary:** \$15,600 per year plus benefits and tuition waiver. **Position summary:** The goal of this project is to assess the invasion extent of Asian swamp eels in the Chattahoochee River near Atlanta, GA. The successful applicant will sample for eels with leaf-litter traps via wading and canoe, extract otoliths and analyze constituent elements for potential location-specific identification, and collect water samples for eDNA analysis. Anticipated start date is January 2015. **Qualifications:** BS degree in biology, fisheries, ecology, or related field. Applicant must be highly motivated with a strong work ethic and able to work independently and in a team setting in/around water during hot, humid summers. Experience with fish otoliths, elemental composition analysis (e.g., laser ablation ICPMS), and basic genetic analysis skills preferred. **To apply:** Send cover letter, CV, copies of transcripts, GRE scores, and names/contact info of 3 references to Jim Long; longjm@okstate.edu

Graduate student opportunity. The Great Lakes Research and Education Center (GLREC) wishes to develop interpretive products based on reviews of journal articles and technical reports on three themes focused on lakes in Voyageurs National Park
Continued on page 7

Jobs continued

Graduate positions continued

Continued from page 6. (VOYA). **Project summary:** The three themes are: 1. the challenge of managing coldwater fish species such as lake trout and cisco in a region projected to experience considerable warming due to climate change; 2. the importance of clean air to aquatic ecosystems, with mercury contamination in VOYA lakes serving as a key example; 3. functional, healthy aquatic ecosystems, the importance of restoring impaired aquatic ecosystems (VOYA is 30% lakes), and the visitor benefits of an ongoing project focused on assessing the relative condition of VOYA lakes in support of lake management. The focus of the work on each theme will be summarizing the literature that will be provided to each intern and developing a site bulletin (1 page, front and back, with illustrations, photos, graphs) on each topic for public distribution and a PowerPoint presentation on each topic for use by National Park Service interpreters. **Salary:** Funding is available for three \$2,500 student contracts (one on each topic). The work would be done through phone and email communications and the cloud, rather than by being physically present in the park. **Application deadline:** Interested students should send cover letters and resumes detailing relevant experience by April 15, 2015 to Joy. The work must be completed between May 15 and September 30, 2015, with flexible start time. **To apply:** Please call or email Joy Marburger at 219-395-1544 (joy_marburger@nps.gov) for additional information regarding these internships.

Post doc positions

Two postdoctoral positions in salmon genetics. Dr. Ian Bradbury, Department of Fisheries and Oceans Canada out of Halifax, NS is seeking two fellows to start early spring or fall 2015 working on population genomics of Atlantic salmon in eastern Canada. **Application deadline:** Reviews will begin March 1, 2015. **Position summary:** PDF #1. Escapes of farm salmon are both an economic loss and an environmental concern. Their effects on wild salmon

populations will be a function of: (1) the presence of escapes and subsequent interbreeding (frequency and magnitude); (2) differences in traits that affect survival, competition and reproduction; (3) ability of natural systems to buffer against escapes through natural selection; and (4) our ability to mitigate impacts. The PDF will work collaboratively with other researchers (e.g., Dr. Ian Fleming, MUN) and students using population genomics, experimental crosses, and transplants to quantify the ecological and evolutionary impacts of escaped salmon and design mitigation measures. PDF #2. SNP based identification of Atlantic salmon in North America. Atlantic salmon migrate from local rivers to northern feeding areas off West Greenland or the Labrador Sea. Genetic assignment of salmon caught at sea using the current microsatellite baseline allows only regional assignment and is insufficient for many management and conservation questions. This PDF will work collaboratively other researchers (e.g., MUN, Laval University) and use genome scans based on large SNP arrays and RAD sequencing to explore the genomic basis of fine scale adaptive variation and quantify homing / straying rates in this species. This information will ultimately be used to build a SNP panel for fine scale North American assignment and fisheries management. **Qualifications:** The ideal candidates will possess a PhD; have research interests and training in the areas of population genomics, fish ecology and behavior, and fish rearing; be capable of designing and undertaking both field and laboratory research; and have reasonable facility with the analysis of large data sets. **To apply:** email a cover letter, and CV to ian.bradbury@dfo-mpo.gc.ca

Postdoctoral researcher in fish genomics and genetics. Great Lakes Genetics/Genomics Laboratory, University of Toledo. **Application deadline:** 7th April, 2015. **Salary:** Competitive salary, full benefits. **Position summary:** The primary function of the position is to assist Dr. Stepien in co-leading her laboratory and in helping her to collect and analyze
Continued on page 8

Jobs continued

Post Doc positions continued

Continued from page 7. DNA bioinformatic, sequence, and microsatellite data for her funded projects, as well as to publish the results in top peer-reviewed scientific journals. The postdoctoral research associate will organize large DNA sequence databases, train and co-supervise students and technicians, and be thoroughly competent and experienced in bioinformatics, DNA extraction, PCR, DNA sequencing, and population genetic and systematic evolutionary data analyses. The postdoctoral research associate will help Dr. Stepien to build her Great Lakes Genetics/Genomics Laboratory into a world-class top-notch research laboratory and will assist in advancing the reputation and renown of the Lake Erie Center. The secondary function of the position is to aid Dr. Stepien in furthering strong interactions and collaborations with other faculty and researchers, fisheries and environmental agencies, and the local community. **Qualifications:** Ph.D. degree required in hand. Publication of Ph.D. results in peer-reviewed journals required. Excellent recommendation from former advisors required. 3-5 (or more) publications in peer-reviewed journals strongly preferred. Teaching and supervisory experience preferred. Grant writing experience required. Grant funding record preferred. Data management experience, bioinformatics, and data analysis experience in molecular phylogenetics and population genetics required. DNA extraction, PCR, DNA Sequencing (both Sanger and Illumina MiSeq), sequence alignment and GenBank experience required. Familiarity with QIMME, Unix/Linux operating systems and writing script in Perl is a plus. Strong communication (written, oral) skills required. Ability to multi-task required. Experience in working with fishes strongly preferred. Strong personnel interaction skills and experience in training others required. Oral research presentation experience at national or international scientific conferences required. Specimen collection experience –strongly preferred. **To apply:** Send (1) cover letter, (2) CV, (3) 2 letters of reference, (4) copies of graduate and undergraduate transcripts via .pdf to Dr. Stepien at carol.stepien@utoledo.edu.

Professional

Lead scientist, North America Fisheries. The Nature Conservancy. **Application deadline:** March 5, 2015. **Salary:** Commensurate with experience. **Position summary:** The Lead Scientist provides technical and scientific support and leadership for the North America Fisheries Program and regional fishery conservation efforts on the Atlantic Coast and in the Caribbean. The Lead Scientist helps to establish the Conservancy as a leading fisheries conservation partner, helps to develop and shape conservation priorities, projects, and long-term conservation strategies, builds scientific and technical capacity in the field and develops key partnerships with field offices, federal and state agencies, fishermen, academic institutions, or others to identify and resolve technical issues. **Qualifications:** Master's Degree in science related field and 4 years of experience or equivalent combination of education and experience. Ph.D. and 3 years experience preferred. **To apply:** www.nature.org/careers

Genetics laboratory technician or manager. Cheetah Conservation Fund, Namibia. **Application deadline:** The specific title and remuneration are dependent on the applicant's level of experience. **Position summary:** The Cheetah Conservation Fund (CCF), Namibia, is currently looking for a highly motivated individual to join its genetics laboratory staff in the position of Laboratory Technician or Manager. The successful applicant is expected to start in early March 2015. Other responsibilities will be curation of databases, development of laboratory services, writing of permit applications and reports, and keeping the laboratory adequately stocked at all times. Prior experience in these particular tasks is not required; however, willingness to learn and attention to detail are essential. This position will also provide opportunities for direct participation in research projects as time permits. The genetics laboratory is located at the CCF research center, about 40 km east of Otjiwarongo, Namibia. Staff members live on CCF property and housing is provided. Meals are prepared by CCF

Continued on page 9

Jobs continued

Professional continued

Continued from page 8. kitchen staff and are eaten communally. **Qualifications:** The successful candidate should have a strong background in best laboratory practices in molecular biology, and have excellent organizational and communication skills. His/her main responsibilities will include maintenance and operation of our genetic analyzers and supervision of interns and students, ensuring that good laboratory practices and protocols are followed. **To apply:** Applicants should send their CV, letter of motivation, and transcripts to genetics@cheetah.org. Further information regarding CCF and its mission to conserve cheetahs in the wild may be found at www.cheetah.org.

Unromantic comic

The
Fastest Way
To A Man's Heart
Is By Tearing A
Hole Through
His Ribcage

Reprinted from IFLScience.

Section Officers, Committees and Representatives

President

Jeffrey Olsen

Jeffrey_Olsen@fws.gov

President Elect

Wendylee Stott

wstott@usgs.gov

Secretary/Treasurer

Amy Welsh

Amy.Welsh@mail.wvu.edu

Newsletter Editor

Joy Young

Joy.Young@MyFWC.com

Committees

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Jeff Olsen

James Wright Award

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Carol Stepien

Listerve

Andrew Whitely

awhiteley@eco.umass.edu

Stevan Phelps Award

Ken Currens

Website

Wesley Larson

wlarson1@uw.edu

Kristen Gruenthal

Kristen.gruenthal@noaa.gov

Representatives

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