



September 2019

Vol. 32, No. 2

# THE Open Reading Frame

## Newsletter of the Genetics Section of the American Fisheries Society

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## President’s Message

Welcome to the Fall 2019 edition of the Genetics Section newsletter. The executive committee (Marlis Douglas, Wes Larson, and Wendylee Stott) and I are excited to see everyone who will be coming to the joint conference with TWS in Reno!

There are many symposia with genetics and genomics content at this year’s national conference. Besides the three symposia sponsored by the Genetics Section, there are at least nine additional symposia that can be added to this list. With all of these symposia and an opportunity to interact with the TWS Molecular Ecology Working Group members, it should be a great meeting.

The Section Business meeting will be Monday September 30th from 5-6pm in the Sparks Convention Center, room A14. We hope to see you there as we give out this year’s awards and discuss current Genetics Section issues. I’d like to congratulate this year’s award winners. This year’s Wright Award winners were Aviva Fiske and Emily Dziedzic. This year’s Phelps Award went to Megan Osborne and co-authors for their paper entitled ‘Variance in Reproductive Success is Driven by Environmental Factors, not Mating System, in Bonytails’ published in TAFS. This year’s Early Career award went to Cassidy Shaw. Congratulations to all of you!



Dr. Andrew Whiteley  
AFSGS President

*Cont’d on page 2*

*President's Message cont'd*

We will hold a social for the Genetic Section on Monday evening, September 30th, at the Depot Craft Brewery & Distillery, 325 E 4th Street, Reno. Please join us for some food and drink after the business meeting. We will be asking (but not requiring) that non-students and postdocs contribute \$20 if you come that evening.

Looking ahead, the Genetics Section has agreed to build an exhibit for the Columbus 2020 meeting. This exhibit will showcase the past, present, and future of the incorporation of genetics and genomics information in fisheries biology and management with the goal of spreading the word about the Genetics Section to others in national AFS. I am still looking for volunteers for a 2020 Exhibit Committee, so please let me know if you are interested.

I look forward to seeing many of you soon in Reno.



Andrew

## Reno AFS-TWS Meeting Hosting Many Genetics Symposia



### **The Genes Among Us: Molecular Methods for Species Monitoring and Biodiversity Surveys in Aquatic and Terrestrial Ecosystems**

*Organized by Brooke Penaluna and Tiffany Garcia*

Monday, September 30, 8:00am - 5:20pm

Sparks Convention Center, Room A2

### **Close-Kin Mark-Recapture (CKMR): A Framework for Estimating Abundance and Demography from Genetically Related Individuals**

*Organized by Paul Conn, Jay Ver Hoef, and Jamie Sanderlin*

Monday, September 30, 1:10pm - 5:00pm

Sparks Convention Center, Room D2

### **To Go Boldly...: The Genomics Frontier of Conservation and Management**

*Organized by Marlis Douglas, Kristin Brzeski, Emily Latch, and Michael Douglas*

Part I: Tuesday, October 1, 8:00am - 5:00pm

Part II: Wednesday, October 2, 8:00am - 11:50am

Sparks Convention Center, Room A2

### **The 3 R's of Fish and Wildlife Translocations: Rescue, Reinforcement, and Re-establishment**

*Organized by Andrew Whiteley, Joshua Millspaugh, Ellen Pero, Donovan Bell, and Zachary Robinson*

Thursday, October 2, 8:00am - 5:00pm

Sparks Convention Center, Room C1

### **Using Genetic and Genomic Data to Understand Movement Dynamics: How Organisms Assort Themselves on a Riverscape/Landscape and What this Means for Conservation**

*Organized by Mary M. Peacock, Elizabeth Mandeville*

Friday, October 3, 8:00am - 5:00pm

Sparks Convention Center, Room A2

### **Moving Forward or Standing Still: The Role of Captive Breeding in Species Recovery**

*Organized by Danielle Frechette and Adrian Spindle*

Tuesday, October 1, 8:00am - 4:40pm

Sparks Convention Center, Room C3

### **Wildlife & Conservation Genetics I**

Monday, September 30, 8:00am - 9:40am

Sparks Convention Center – D10

### **Wildlife & Conservation Genetics II**

Tuesday, October 1, 3:40pm - 5:00pm

Sparks Convention Center – F3

### **Conservation Genetics**

Wednesday, October 2, 8:00am - 11:30am

Sparks Convention Center – A15

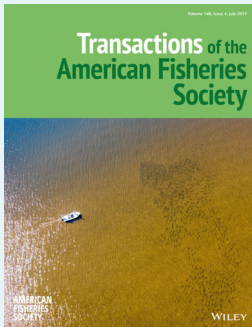
### **eDNA: Methods and Applications**

Tuesday – 1 October 2019

Sparks Convention Center – A20

# In case you missed it...

## Recent genetics papers from AFS journals and beyond



Environmental DNA assays for invasive populations of the Black Carp, *Mylopharyngodon piceus*, in North America. X. Guan, E.M. Monroe, K.D. Bockrath, et al. TAFS, in press.

Development and Application of Single-Nucleotide Polymorphism (SNP) Genetic Markers for Conservation Monitoring of Burbot Populations. M.R. Campbell, N.V. Vu, A.P. LaGrange, et al., TAFS, in press.

Genetic Assessment Reveals Population Fragmentation and Inbreeding in Populations of Brook Trout in the Laurel Hill of Pennsylvania. S.D. Beer, M.L. Bartron, D.G. Argent, and W.G. Kimmel, TAFS, in press.

Genetic Population Structure of White Grunt in the Southeastern United States. T.P. O'Donnell, M.J.M. Reichert, T.L. Darden. NAJFM, 39:725-737.

Walleye Genetic Characterization in the Northern Ceded Territory of Wisconsin: Implications for Stocking Using Conservation Strategies. J.J. Hammen and B.L. Sloss, NAJFM 39:693-704.

A Statewide Evaluation of Florida Bass Genetic Introgression in Tennessee. J.S. Hargrove, M.W. Rogers, P.T. Kacmar, and P. Black, NAJFM 39:637-651.



Background selection and  $F_{ST}$ : Consequences for detecting local adaptation. R. Matthey-Doret and M.C. Whitlock. Molecular Ecology, in press.

Parent and offspring genotypes influence gene expression in early life. D.J. Newhouse, M. Barcelo-Serra, E.M. Tuttle, et al., Molecular Ecology, in press.

The application of CRISPR-Cas for single species identification from environmental DNA. M.-A. Williams, J. O'Grady, B. Ball, et al., Molecular Ecology Resources, in press.

Population correlates of rapid captive-induced maladaptation in a wild fish. D.J. Fraser, L. Walker, M.C. Yates, et al. Evolutionary Applications, 12:1305-1317.

Novel signals of adaptive genetic variation in northwestern Atlantic cod revealed by whole genome sequencing. G.V. Clucas, R.N. Lou, N.O. Therkildsen, and A.I. Kovach, Evolutionary Applications, in press.

Artificial selection on reproductive timing in hatchery salmon drives a phenological shift and potential maladaptation to climate change. M.D. Tillotson, H. K. Barnett, M. Bhuthimethee, et al. Evolutionary Applications, 12:1344-1359.

Attack of the PCR clones: Rates of clonality have little effect on RAD-seq genotype calls. P.T. Euclide, G.J. McKinney, M. Bootsma, et al. Molecular Ecology Resources, in press.

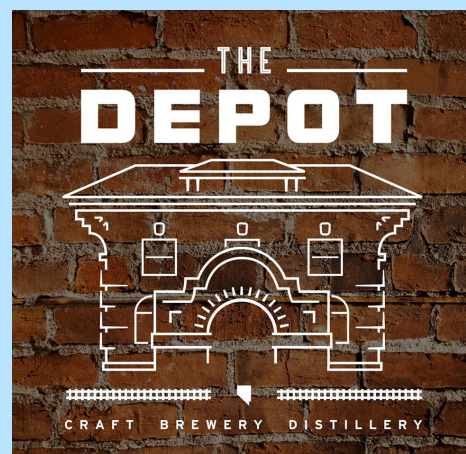
## Genetics Section Social

Monday, September 30

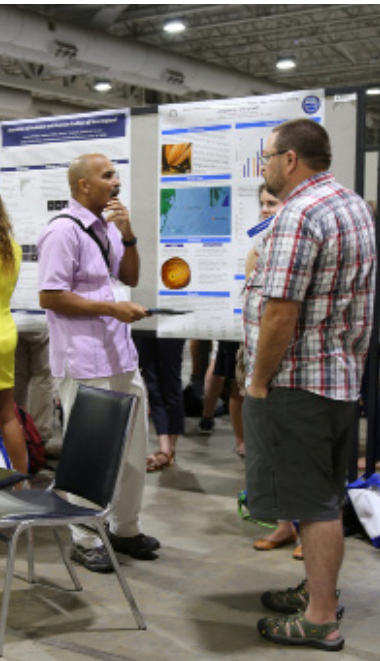
7:00 - 10:00pm

The Depot Craft Brewery & Distillery

325 E. 4th Street, Reno, NV



# Calendar



## September 2019

29th-October 3rd: American Fisheries Society and The Wildlife Society 2019 Joint Annual Conference, Reno, NV

## October 2019

6th-10th: Organization of Fish & Wildlife Information Managers Annual Meeting, Shepherdstown, WV

27th-30th: Southeastern Association of Fish and Wildlife Agencies, Hilton Head, SC

## November 2019

3rd-7th: 25th Biennial Coastal and Estuarine Research Federation Conference, Mobile, AL

11th-15th: North American Lake Management Society 39th International Symposium, Burlington, VT

18th-21st: International Symposium on Fisheries Sustainability: Strengthening the Science-Policy Nexus, Rome, Italy

20th-24th: 51st Annual Desert Fishes Council Meeting, Alpine, TX

## December 2019

3rd-5th: 70th Northwest Fish Culture Concepts Annual Meeting and Workshops, Victoria, BC

## January 2020

3rd-7th: American Society of Naturalists Stand-Alone Meeting, Asilomar, CA

11th-15th: Plant and Animal Genome Conference, San Diego, CA

14th-15th: Atlantic Salmon Ecosystems Forum, Orono, ME

26th-29th: Midwest Fish and Wildlife Conference, Springfield, IL

## February 2020

16th-21st: Ocean Sciences Meeting, San Diego, CA

18th-20th: Catfish 2020 - Third International Catfish Symposium, Little Rock, AR

## March 2020

23rd-24th: 4th International Conference on Aquaculture and Marine Biology, London, UK

## May 2020

16th: World Fish Migration Day

## June 2020

11th-19th: IUCN World Conservation Congress, Marseille, France

15th-18th: 61st Western Fish Disease Workshop, Hood River, OR

22nd-26th: AFS Fish Health Section and Northeast Fish Health Committee Meeting, Burlington, VT

29th-July 2nd: 14th International Congress on the Biology of Fish. Montpellier, France

## August 2020

30th-Sept 3: 150th Annual Meeting of the American Fisheries Society, Columbus, OH

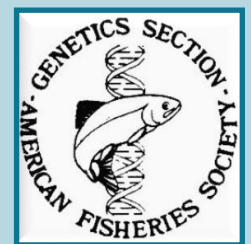
## October 2020

11th-15th: 8th World Fisheries Congress, Adelaide, Australia

**To find dates and information for AFS chapter meetings, visit [fisheries.org/about/units/chapters/](https://fisheries.org/about/units/chapters/)**

# Help us tell the story of the Genetics Section

2020 marks the 150th anniversary of the American Fisheries Society. To celebrate this milestone, AFS units have been invited to create an exhibit to showcase their mission, their history, and where they're heading next.



Please consider volunteering for the committee to help create our exhibit. Section members from all career stages are encouraged to get involved.

**For more information, contact Genetics Section President Andrew Whiteley**

# Job Postings

## Tenure track positions

### Providence College

The Department of Biology at Providence College invites applications for a tenure-track Assistant Professor position beginning fall 2020 to support a recently developed Environmental Biology Major.

### Illinois State University

The School of Biological Sciences at Illinois State University in Normal, IL ([www.bio.illinoisstate.edu](http://www.bio.illinoisstate.edu)) invites applications for two, nine-month, tenure-track positions, one each in evolutionary biology and conservation biology at the level of Assistant Professor.

### The Rockefeller University

The Rockefeller University seeks exceptional, creative scientists to join its faculty. We invite applications from outstanding junior candidates for tenure-track positions and also welcome applications from tenured scientists at an early stage of their career.

### Rutgers University - Newark

The Department of Biological Sciences (Ecology and Evolution cluster), Rutgers University-Newark, seeks to hire a tenure-track assistant professor to begin September 2020.

## Non-tenure track positions

### Assistant Marine Scientist - South Carolina DNR

Will join the population genetics team to contribute to the population genetic and molecular tool research projects on marine and freshwater fishes in areas of stock enhancement, fisheries management, conservation and tool development. Will conduct field and laboratory research, data collection and analysis and collection and data management. Prepares reports and presentations. Authors technical manuscripts. Coordinates and supervises personnel, prepares proposals and budget management.

### Fisheries Research Supervisor - Minnesota DNR

This position will plan, supervise, and provide technical direction for the statewide fisheries research program, which includes providing information, knowledge, and new methods essential to continuously improve the fisheries program and management decisions.

## Postdoc positions

### University of Windsor

We are seeking a leader for a project investigating microbial/microplankton community dynamics associated with fresh and marine water environments and their potential for ecological invasiveness.

### Auburn University

The School of Fisheries, Aquaculture and Aquatic Sciences at Auburn University is seeking candidates for a Post-Doctoral Fellow to work both independently and as part of a team to conduct scientific research on oyster breeding.

### USGS Leetown Science Center, West Virginia

We seek a Postdoctoral Research Associate as part of a nation-wide, interdisciplinary team investigating fish responses to flow variation in headwater streams. The project goal is to model stream flow in headwater streams and to relate flow to stream fish population dynamics. The target start-date is January 2019.

## Graduate student positions

### Washington State University

The Phelps laboratory in the Department of Animal Sciences at Washington State University is seeking one or more Ph.D. or M.S. level graduate research assistants to study salmonid functional genomics. The laboratory is interested in understanding the link between genotype and phenotype in fish to gain insight into the genetic drivers behind important physiological and ecological traits. For more information, contact Dr. Michael Phelps at <https://ansci.wsu.edu/people/faculty/michael-phelps/>

### Humboldt State University

Seeking three M.S. students to use environmental DNA (eDNA) to monitor juvenile coho salmon: (i) Experimental assessment of eDNA ecology and dynamics in a natural riverine setting, (ii) Comparison of local-scale occupancy estimates from eDNA and field surveys, and (iii) Comparison of basin-scale occupancy estimates from eDNA and field surveys. Students responsible for field collections of samples, laboratory analysis, data analysis, and report preparation.

# Workshops

## **Landscape genomics, November 25th - 29th, 2019 - Berlin, Germany**

The course will provide an overview of the type of dataset that can be used for a landscape genomics analysis. Firstly, students will learn how to obtain environmental data from publicly available databases, how to process it with Geographic Information Systems (GIS) and how to use the latter to produce indicators able to describe the characteristics of the landscape. Next, we will discuss the different approaches to obtain genetic data and subsequently show how to study genetic variation and population structure across space in the R environment. We will give an overview of the different statistical approaches to study local adaptation, and the participants will be trained in using two of them, Sambada and LFMM. The course will also cover the critical task of the interpretation and validation of the results. Finally, the course will consider the crucial aspects and good habits to account for when planning a landscape genomics experiment (e.g. sampling design). Contact: <http://www.physalia-courses.org/>.

## **Environmental DNA for surveys and monitoring - November 4th - 7th, 2019 - Cumberland, Ohio**

Environmental DNA is increasingly used as a monitoring tool for aquatic and even some terrestrial species. This 4 day workshop will provide a detailed introduction to eDNA methodology and how to apply the method into a monitoring framework. The workshop will combine lecture components with hands-on lab exercises. The workshop is geared toward focal species eDNA monitoring, although metabarcoding approaches will be demonstrated and discussed. This workshop is targeted toward both professionals and graduate students with limited first-hand experience with eDNA that are looking to learn more about the method or develop their own eDNA projects. No previous experience is required, although some prior experience in either genetic techniques or monitoring methods would be helpful. Contact: Stephen Spear, [sspear@thewilds.org](mailto:sspear@thewilds.org)

## **Evolution of communication - January 3, 2020 - Austin, TX**

We are organizing a workshop-symposium combination that seeks to integrate approaches from neuroscience, cognitive ecology, biomechanics, spatial ecology, machine vision, evolution, and animal behavior to address the spatiotemporal dynamics of complex signaling. The workshop, to take place in 2020, will focus on identifying key questions and promising frontiers on this topic. A subsequent SICB symposium will then extend upon these discussions to highlight new directions in the field. During the workshop, interdisciplinary research teams will discuss critical needs and open research questions related to topics which may include: 1) coordination of spatial positioning between senders and receivers during dynamic communicatory interactions, and the evolution of cognitive mechanisms and signaling features that aid in such coordination 2) biomechanical, neurophysiological, and ecological constraints on display production and the effective direction of signals toward appropriate receivers across space and time, 3) receiver encoding of complex signals from neurobiological and cognitive perspectives, thereby linking variation in signal spatiotemporal dynamics to attention, habituation, learning, localization, and scene analysis, 4) machine learning and social network tool development for improved characterization of spatiotemporal dynamics. Our objective is to motivate/guide researchers in applying approaches and knowledge from other disciplines to generate new experimental designs, analytic tools, and theoretical paradigms that will advance our understanding of spatiotemporal complexity in animal communication. Contact: <https://forms.gle/SSM3uZeZic16uRAp7>.



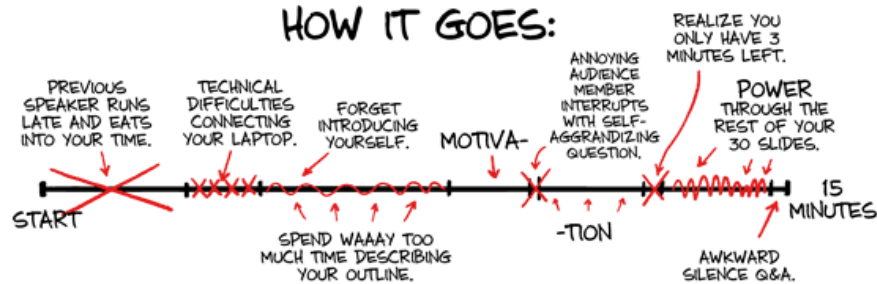
# Comic

## YOUR CONFERENCE PRESENTATION

### HOW YOU PLANNED IT:



### HOW IT GOES:



"Piled Higher and Deeper" by Jorge Cham; www.phdcomics.com

## Section officers, committees, and representatives

### Section Officers

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Andrew Whiteley  
andrew.whiteley@umontana.edu

#### President-Elect

Marlis Douglas  
mrd1@uark.edu

#### Past President

Wendylee Stott  
wstott@contractor.usgs.gov

#### Secretary-Treasurer

Wes Larson  
wes.larson@uwsp.edu

### Committees

#### Hall of Excellence

Marlis Douglas, Chair  
Robin Waples, Member-at-large  
Jeff Olsen  
Wendylee Stott

#### James E. Wright Award

Andrea Schreier, Chair  
Melinda Baerwald  
Carol Stepien

#### Early Career Award

Daniel Gomez-Uchida, Chair  
Craig Stockwell  
Emily Lescak

#### Stevan Phelps Award

Ken Currens, Chair  
Adrian Spidle  
Jason Baumsteiger  
Wes Larson

#### Membership

Mary Peacock

### Representatives

#### PFIRM

Kim Scribner

#### Black Bass Symposium

Meredith Bartron

#### Fisheries

Marissa Jones

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