



# THE Open Reading Frame

Newsletter of the Genetics Section of the American Fisheries Society

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Sharon Rayford/USFWS

## President’s Message

Welcome to the May 2022 edition of the Genetics Section newsletter. As spring makes its hesitant arrival, our focus shifts towards all the exciting activities in plan for summer and fall – to include the upcoming JASM (Grand Rapids, MI) in May and AFS annual meeting (Spokane, ID) in August. Many of you might elect to mingle and reconnect in person. And based on our Section’s 2-year rotation, we will elect new officers and our leadership will transition.

Yes, there is still a lot of uncertainty with regards to the pandemic, how global economies and supply chain issues will continue to impact our lives, and how political events might shape our future. If anything, I suspect we have gotten a bit more used to living with uncertainty – like it or not.

As my time as president of the Genetics Section dwindles, it gives me pause to reflect on what our Section has accomplished over the last two years. I feel I should have accomplished more. In a way, as scientists we’re always striving for ‘improvement’ – easier lab methods, better hypotheses, faster analytical frameworks - always focusing on the ‘mountain yet to climb.’

But, I subsequently remind myself that this is the tenor of a ‘talk’ I often have with graduate students. After the initial excitement of ‘being a graduate student’ fades, and the eddies, currents, and rapids that define graduate school come into focus, there is often a feeling of disillusionment that replaces the euphoria. I then remind them to look over their shoulder – to recall their very first days in graduate school and how far they have already progressed. For example, they now routinely employ techniques they didn’t even know existed, absorb papers with fascinating research topics they didn’t think they would ever comprehend – and the list goes on. So, I should heed my own admonitions.



Dr. Marlis Douglas  
AFSGS President

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*President's Message, cont'd*

For sure our Section maintained a steady trajectory during the unpredictable pandemic storm. In fact, it only just occurred to me that my entire stewardship as Section President was bracketed by the pandemic – so, it might be appropriate to designate my tenure as ‘the Covid Presidency’ (with hope expressed that the pandemic is finally waning). And it would be easy enough to blame the pandemic as reason not having accomplished enough. But challenging times also force progress – and indeed there have been positive outcomes.

In this sense, a ‘horizon scan’ outlines two important aspects: Technologies and people.

The former has allowed a quick transition to remote work, and the challenges thereof. As a result, digital communications have now become an integral part of our daily routine. Conducting our business virtually allows it to become more equitable and inclusive, with attendance facilitated for those unable to travel. For sure a positive consideration, given our emerging emphases on diversity, equity, and inclusion.

So, how about the ‘people’ aspect? Our members represent a huge resource from which ideas emerge as actionable items. Many members would like to become more actively engaged with AFS, but are not sure where to start or how to do so. Indeed, the pandemic has limited our participation in Section activities, but this also now presents us an emerging opportunity to refocus our collective efforts. Going forward, we need to identify and implement new strategies for participation, and develop outreach that provides opportunities for members to know about and share in various aspects of our Section activities. In addition, the recruitment of new and retention of existing members is for sure a ‘goal’ we must all pursue, as this will shape the future of the Genetics Section. This, in turn, offers yet another method for participation.

So, convince yourself to get personally involved as a member of our Section – let’s work together to build the future of the AFS Genetics Section.

On behalf of the executive committee (Andrew Whiteley – Past President, Garrett McKinney – President-Elect, and Mary Peacock – Secretary/Treasurer), I extend our gratitude and appreciation to all of you for being part of the AFS Genetics Section.

Marlis R Douglas  
President, AFS Genetics Section



Bhutan December 2019 - field team. Credit: Marlis R. Douglas



## 2022 Annual Meeting Genetics Symposium

### Monitoring fishes with environmental DNA: innovative approaches to persistent knowledge gaps

This symposium is open to all aspects of using environmental DNA in water samples for fish species monitoring. All eDNA topics will be covered including shedding, decay, transport, study design, filtration, extraction, targeted methods (qPCR and dPCR), non-target methods (eDNA metabarcoding) and data analysis and modeling. The symposium will emphasize synthetic presentations filling important knowledge gaps as well as novel and innovative presentations that push the limits and extend the applicability of eDNA.

Primary Organizer: Andrew Kinziger, [andrew.kinziger@humboldt.edu](mailto:andrew.kinziger@humboldt.edu)

## Genetics Section Executive Committee Election Candidates

The Genetics Section Executive Committee consists of a President, Secretary-treasurer, and member-at-large. These volunteer positions help keep the Section running and allow us to provide members with opportunities to interact at meetings, stay informed about upcoming meetings, training, jobs, and grant opportunities. The secretary-treasurer and member-at-large positions are two year terms and the president will spend two years as president-elect, two years as president and two years as past-president.

This year we have one candidate for each position of president-elect and secretary-treasurer. You can read their biosketches below. Additional details including a link to vote will be emailed in the coming days.

### President-Elect Candidate Dr. Jared Homola



I am the Assistant Unit Leader of the Wisconsin Cooperative Fishery Research Unit where I direct a conservation genetics research lab at the University of Wisconsin-Stevens Point. My lab works closely with agency cooperators to identify and address knowledge gaps that hinder decision making in fishery management, particularly in the Great Lakes and upper Midwest. My interest in conservation genetics began with undergraduate research at Michigan State University, and grew throughout graduate training at Grand Valley State University and the University of Maine. After graduate school I returned to Michigan State as a postdoc prior to joining the USGS Cooperative Research Units program in February 2021.

I have been a member of AFS and the Genetics Section since 2008. In 2017, I became the Genetics Section's newsletter editor, a position that has provided wonderful opportunities to engage with our group's members and leadership. These experiences have enriched my career by providing a means of building

relationships with the established leaders of our discipline, as well as fostering student and early career professional peer groups that have benefitted me greatly throughout those phases of my career.

My decision to run for the presidency of the Genetics Section is motivated by a desire to generate a greater sense of community throughout the Section, thereby creating new opportunities for collaboration, mentorship, and general comradery among fish geneticists. Success in that goal will be measured in part by the recruitment and retention of Genetics Section members, with a special focus on students, early career professionals, and individuals from underrepresented groups. Work on diversity, inclusivity, and member outreach by the current and past executive committees has us well positioned to achieve these goals. I would be grateful for the opportunity to steward the Genetics Section into a new phase of growth and service to the members of our profession.

### Secretary-Treasurer Candidate Dr. Mary Peacock

I am a Conservation Geneticist who works primarily on ESA listed threatened and endangered fish species found in the western United States. My primary research question focuses using molecular tools to assess how organisms assort themselves on the landscape and how anthropogenic disturbance affects these patterns. I have a large research program on Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) where I work closely with federal and state land and species management agencies as well as non-governmental organizations such as Trout Unlimited, in formulating recovery strategies and implementing genetic monitoring of restoration activity outcomes. I received my PhD in Zoology from Arizona State University in 1995. I have been a faculty member in the Department of Biology at the University of Nevada, Reno since 2004. Prior to that, I was the Assistant Director for Research for the Biological Resources Research Center, a conservation biology organization with the University of Nevada system. I have been a member of the American Fisheries Society since 1994 and active in the Genetic section for at least the past decade. I am a big fan of the American Fisheries Society and have served one two year term as Secretary/Treasurer for the Genetics Section to date. I am seeking another term as we transition from remote interactions to in person to help make this transition smoother. I am pleased to have served and would be please to continue to serve in this capacity if elected.







# Genetics Section Award Nominations Sought

## Early Career Award

The Genetics Section Early Career Award is given annually and recognizes the contribution of early-career researchers to the field of fisheries genetics. The goal of this award is to promote innovative and particularly applicable genetics research, increase interest in fisheries genetics careers, and enhance professional connections among fisheries geneticists. The candidate's genetics work should be applicable to the Society's mission to "improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science". The award will be presented at the Genetics Section meeting during the AFS Annual Meeting.

**Eligibility:** There are no restrictions on nominators. A nominee must be a full or affiliate member of the AFS Genetics Section and must be within five years of having completed graduate training, including post-doctoral research, and in the initial stages of career development whether that be in an academic, agency, NGO, or other conservation setting.

**Nomination package:** 1. Cover letter with the nominee's name, professional address and contact information, and the same for the person submitting the nomination. 2. A one-page letter of nomination. 3. The nominee's C.V. 4. Three reprints of publications or other summary material representative of the nominee's contribution to fisheries genetics.

Nominations should provide clear evidence of how the candidate's research furthers our understanding of fish evolution, ecology, conservation or management. Leadership in integrating genetic research with education or end-user/community outreach is considered strongly.

**Application details will be provided via email soon.**

## James E. Wright Graduate Award

The Genetics Section of the American Fisheries Society is pleased to announce the James E. Wright Graduate Award. This award is presented annually by the Genetics Section at the AFS Annual Meeting and is intended to recognize excellence in graduate-level work in fisheries genetics.

**Eligibility:** The applicant must be a full or affiliate member of the Genetics Section at the time of application. Students are eligible to win the award once per graduate degree program. For example, a student who received the award as a Masters student is eligible to win again as a PhD student, but a PhD student who wins the award once is not eligible to win in future years.

**Selection Criteria:** 1. Potential for success in research in fisheries genetics (60%) 2. Anticipated contribution to upcoming annual meeting, e.g. paper, poster, or other contribution (20%) 3. Service to the Society, Sections, or Chapters (10%) 4. Demonstrated need for travel assistance (10%)

**Application Procedure:** Application package should include: a. A brief curriculum vitae including anticipated degree, date of completion, and career goals, b. A statement of the thesis or dissertation and abstract of progress to date, c. The names and contact information for two references familiar with the applicant's background and abilities, d. A statement of previous service to the Society, Sections, or Chapters, and need for travel assistance, e. A statement addressing anticipated contribution to the upcoming AFS Annual Meeting

**Application details will be provided via email soon.**



# American Fisheries Society

## Genetics Section Hall of Excellence

The Hall of Excellence recognizes professionals who have made outstanding contributions to the advancement of management or conservation of aquatic species and ecosystems through the application of genetics tools, techniques, or theory. [You can tour the virtual Hall of Excellence here.](#)

Up to four inductees are entered into the Hall of Excellence per year, and presentation(s) are made at the AFS Annual Meeting. Nominations for the Hall of Excellence can be provided by any Genetics Section member. Please download a Word version of the nomination form, [linked here.](#)

**Nomination procedure:** Nominations should identify individuals (past or present) that have made significant contributions to genetics of aquatic organisms, conservation or management-oriented fisheries/aquatic research, or the promotion of genetic applications for fisheries and aquatic resource conservation, protection, and management. Nominee membership in AFS and the Genetics Section are not pre-requisites, but service to AFS and the Genetics Section will be considered in the award process.

**A nomination package should include:**

1. Name of the nominee
  - 2 Short biography and curriculum vitae
  3. Explanation of his or her contribution to the field, as well as to AFS, if applicable
  4. Contact information (current address, phone, and email), date of birth, and date of death, if applicable
- Note: Nomination packages for nominees not inducted can be updated by the nominator and rolled over for consideration for up to two years.

**Selection procedure:** The Hall of Excellence Award Committee is composed of four members, including the Genetics Section President-Elect (Chair), the two previous past presidents, and a member-at-large. The nominations are reviewed by the Award Committee, and recommendations are made by the Chair to the Genetics Section President. Candidates selected for induction need to provide a photo (head and shoulders) for display on the website.

**Deadline:** 30-June-2022.

Submit application materials to: President-Elect Garrett McKinney at [Garrett.McKinney@dfw.wa.gov](mailto:Garrett.McKinney@dfw.wa.gov)

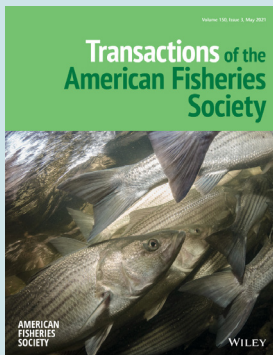
Marlis R. Douglas. Electrofishing in Bhutan with Bhutanese collaborators.



# In case you missed it...

## Recent genetics papers from AFS journals and beyond

*Editor's note: Click citations for link to papers*



Krolow, A.D., Geheber, A.D. and Piller, K.R. If You Build It, Will They Come? An Environmental DNA Assessment of Fish Assemblages on Artificial Reefs in the Northern Gulf of Mexico. *Trans Am Fish Soc.*

Farrell, C.J., et al. Cytological and molecular approaches for ploidy determination: results from a wild Walleye population. *North Am J Fish Manage.*

Nelson, L.N., Jones, C.M. and McDowell, J.R. Rangewide Population Structure of the Clearnose Skate. *Trans Am Fish Soc.*

Horn, R.L., et al. Monitoring hatchery broodstock composition and genetic variation of spring/summer Chinook salmon in the Columbia River Basin with multigeneration pedigrees. *North Am J Fish Manage.*

Hess, J.E., et al. Pacific Lamprey translocations to the Snake River boost abundance of all life stages. *Trans Am Fish Soc.*



Knutsen, H., et al. Combining population genomics with demographic analyses highlights habitat patchiness and larval dispersal as determinants of connectivity in coastal fish species. *Molecular Ecology.*

Jiménez-Mena, B., et al. Fishing for DNA? Designing baits for population genetics in target enrichment experiments: Guidelines, considerations and the new tool superRBaits. *Molecular Ecology Resources.*

Rougemont, Q., et al. . Long-distance migration is a major factor driving local adaptation at continental scale in Coho salmon. *Molecular Ecology.*

Laine, V.N. et al. An ecologist's guide for studying DNA methylation variation in wild vertebrates. *Molecular Ecology Resources.*

Formenti, G. et al. The era of reference genomes in conservation genomics. *Trends in Ecology and Evolution.*

Dallaire, X. and Merot, C. A setback into a success: What can batch effects tell us about best practices in genomics. *Molecular Ecology Resources.*

Verdier, H. et al. Passive sampling of environmental DNA in aquatic environments using 3D-printed hydroxyapatite samplers. *Molecular Ecology Resources.*

Shelley, J.J., et al. Landscape context and dispersal ability as determinants of population genetic structure in freshwater fishes. *Freshwater Biology.*

Azzurro, E., et al. Right out of the gate: The genomics of Lessepsian invaders in the vicinity of the Suez Canal. *Biological Invaders.*

Knutsen, H. et al. Combining population genomics with demographic analyses highlights habitat patchiness and larval dispersal as determinants of connectivity in coastal fish species. *Molecular Ecology.*

Ciezarek, A., et al. Whole genome resequencing data enables a targeted SNP panel for conservation and aquaculture of *Oreochromis* cichlid fishes. *Aquaculture.*

Attard, C.R.M., et al. Fish out of water: Genomic insights into persistence of rainbowfish populations in the desert. *Evolution.*

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# Calendar

## May 2022

- 9<sup>th</sup>-12<sup>th</sup>: Fourth ICES PICES Early Career Scientists Conference, St. Johns, Newfoundland.
- 9<sup>th</sup>-12<sup>th</sup>: Native American Fish and Wildlife Society 39th Annual National Conference, Miami, Florida.
- 14<sup>th</sup>- 20<sup>th</sup>: Joint Aquatic Sciences Meeting, Grand Rapids, Michigan.

## June 2022

- 7<sup>th</sup>-9<sup>th</sup>: Capitol Hill Ocean Week, Washington, D.C.
- 20<sup>th</sup>-22<sup>th</sup>: 4th World Small-Scale Fisheries Congress - North America, St. Johns, Newfoundland.
- 20<sup>th</sup>-21<sup>th</sup>: EIFAAC Symposium on Inland Fisheries and Aquaculture, Killarney, Ireland.
- 28<sup>th</sup>- July 1<sup>st</sup>: 14th International Congress on the Biology of Fish, Montpellier, France.

## July 2022

- 27<sup>th</sup>-31<sup>st</sup>: Joint Meeting of Ichthyologists and Herpetologists, Spokane, Washington.

## August 2022

- 14<sup>th</sup>-19<sup>th</sup>: Ecological Society of America 107th Annual Meeting (joint with Canadian Society for Ecology and Evolution), Montreal, Quebec.
- 21<sup>st</sup>-25<sup>th</sup>: AFS Annual Meeting, Spokane, Washington.
- 29<sup>th</sup>- Sept 1<sup>st</sup>: Biennial National Tribal and Indigenous Climate Conference, St. Paul, Minnesota.

## Sept 2022

- 6<sup>th</sup>-8<sup>th</sup>: Challenger Society for Marine Science Conference, London, United Kingdom.
- 12<sup>th</sup>-14<sup>th</sup>: 4th World Small-Scale Fisheries Conference Series, Valletta, Malta.
- 19<sup>th</sup>-22<sup>nd</sup>: ICES Annual Science Conference 2022, Dublin, Ireland.

## November 2022

- 13<sup>th</sup>-19<sup>th</sup>: 11th International Flatfish Symposium, New Castle, New Hampshire

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

# Job Postings

## **Research Technician - Stanford University**

The Petrov lab in the Department of Biology at Stanford University, (<http://petrov.stanford.edu/>) has a position for a full-time research assistant at the Life Science Technician I level with interests in genomics, evolutionary, or molecular biology. The main responsibilities of the successful candidate will be performing high-throughput DNA extractions and library preparation for next-generation sequencing. These duties will largely be carried out using existing protocols, though protocol optimization and use of new lab equipment is expected.

## **Genomics Laboratory Manager - Purdue University**

The Genomics Laboratory Manager will provide management, oversight, supervision, and maintenance of research labs in Department of Forestry and Natural Resources on the Purdue University campus, including genomics lab (PFEN 141), tree physiology lab (PFEN 158), and forest ecology, silviculture & soils lab (PFEN G041). In this role, you will be responsible for oversight of all activities taking place in afore mentioned labs. Required bachelor's degree in wildlife, fisheries, forestry, biology, chemistry, biochemistry, molecular biology, or related field, 2 years of general laboratory experience (or MS degree plus one year of experience). Contact Prof. Andrew DeWoody Depts. of Forestry & Natural Resources and Biological Sciences at [dewoody@purdue.edu](mailto:dewoody@purdue.edu) or 765-491-6109.

## **Research Scientist Position in Conservation Genomics and Molecular Ecology - University of Idaho**

We are excited to recruit a Research Scientist with expertise in Conservation Genomics and Molecular Ecology to join our research team at the University of Idaho (UI), Moscow

Campus. The Research Scientist will join a dynamic faculty, postdoc and graduate student team focused on conservation genomic and molecular ecology research projects across the Western US and around the world. Other responsibilities include student mentoring and training related to next-generation sequencing, transcriptomics, eDNA monitoring, diet metabarcoding and associated bioinformatic analyses. Funding is available for 2 years with the opportunity to start in Summer 2022. Priority application deadline is April 26th and applications will be accepted until the position is filled.

## **University of Birmingham UK - Data Analyst in Bioinformatics and Biostatistics**

Carry out bioinformatics data analysis on transcriptomics, genomics, methylomics and ATAC Seq data generated from experimental exposures. Develop appropriate pipelines or skilfully use existing pipelines for multi-omics data analysis. Analyse and interpret data, applying biostatistics on high throughput multi-omics posters. Contribute to satellite projects in the field of ecotoxicology, metagenomics and metabarcoding. Develop research objectives and proposals for own or joint research, with assistance of a mentor if required. Contribute to public engagement activities of benefit to the College and the University, often under supervision of a project leader. PhD-degree or near completion in bioinformatics, computational biology or biology with demonstrated computation skills. Alternatively a Master in one of the fields mentioned is acceptable if accompanied by a demonstrated hands-on experience of at least 3 years. Informal enquires to Dr Luisa Orsini, email:[l.orsini@bham.ac.uk](mailto:l.orsini@bham.ac.uk)



Marlis R. Douglas

## Section Officers

### President

Marlis Douglas  
mrd1@uark.edu

### President-Elect

Garrett McKinney  
Garrett.Mckinney@dfw.wa.gov

### Past President

Andrew Whiteley  
andrew.whiteley@umontana.edu

### Secretary-Treasurer

Mary Peacock  
mpeacock@unr.edu

## Committees

### Hall of Excellence

Garrett McKinney, Chair  
Robin Waples, Member-at-large  
Jeff Olsen  
Wendylee Stott

### James E. Wright Award

Andrea Schreier, Chair  
Melinda Baerwald  
Carol Stepien

### Early Career Award

Craig Stockwell, Chair  
Kerry Reid  
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

### Listserv

Andrew Whiteley

### Website

Kristen Gruenthal  
kristen.gruenthal@alaska.gov.

### Newsletter

Jared Homola  
jhomola@uwsp.edu  
Ellie Weise  
weise.ellie97@gmail.com