

# Spring 2026 Edition

Editors: Leah Baumwell and Katherine Helmer



## AFS SNEC Newsletter

### SNEC Summer Meeting TOMORROW



**U.S. Fish & Wildlife Center**  
300 Westagate Center Drive  
Hadley, MA 01035



**8:30 am** Doors Open  
**9:00 am** Meeting Starts  
**10:10 am** Break  
**12:15 pm** Lunch  
**2:00 pm** Break  
**4:00 pm** Meeting Ends

**Social @ The Quarters**  
8 Railroad St.,  
Hadley, MA 01035

**Don't Forget:**  
BYO Water Bottle & Coffee  
Mug

New this year:  
**Networking Activity**  
**Merch for Sale @ Registration Desk!**



Meeting Tips>>



# Meeting Pros: Tips & Tricks!

Attending the AFS SNEC Summer Meeting is a great opportunity to connect with peers and be inspired by their work. Whether it's your first or fifteenth meeting, it can feel overwhelming—so AFS SNEC members have compiled tips to help you make the most of it.

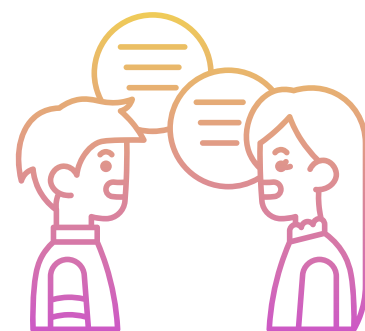
## Before

- **Read the Program:** The meeting program (linked [here](#)) lists presentations, posters, authors, and abstracts. Review it to identify sessions and people of interest.
- **Dive Deeper:** Interested in a presenter but unsure how to start a conversation, or confused by an abstract? Preparing in advance by reviewing their background or key concepts can help you feel more confident.



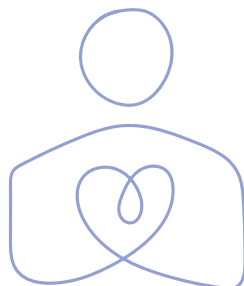
## During

- **Set Goals:** Ask one Q&A question, meet two new people, and collect one contact. Small goals can help you step out of your comfort zone.
- **Stay Calm:** If a presentation loses you early or a poster feels hard to follow, you're not alone. It still helps to note the main takeaways or read a poster's introduction and discussion, even if you don't understand every detail. Ask questions when you can and take mental breaks.

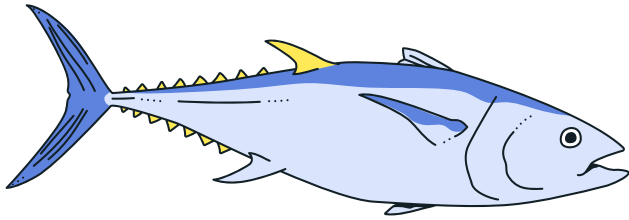


## After

- **Attend the Socials:** The socials after the meeting are a great chance to finish networking, meet new people, and chat in a more relaxed setting
- **Keep in Touch:** If you got someone's contact information at the meeting, follow up before you both forget the conversation. In your email, mention where you met, what you discussed, and why their work interests you.



## Spotlight on Member Research

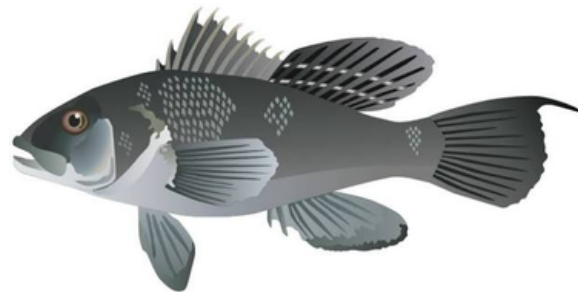


### [A Review of Historical and Contemporary Evidence for Atlantic Bluefin Tuna \(Thunnus thynnus\) Spawning Sites](#)

Alanna M Mnich, Max D Zavell, Barabara A Muhling, Christina M. Hernandez, Steven X Cadrin

### [Experiments and ocean models predict diminishing benefits of offshore overwinter migration in northern stock black sea bass \*Centropristis striata\*](#)

Max D Zavell et al.



### [UMaine, Maine DMR analysis tracks 20 years of coastal species shifts in the Gulf of Maine](#)

Michelle Staudinger

[Click here to read the journal article](#)

### [The Humuhumunukunukuāpuaʻa](#)

Jenna O'del





## SNEC Student Section

Student and Job Opportunities

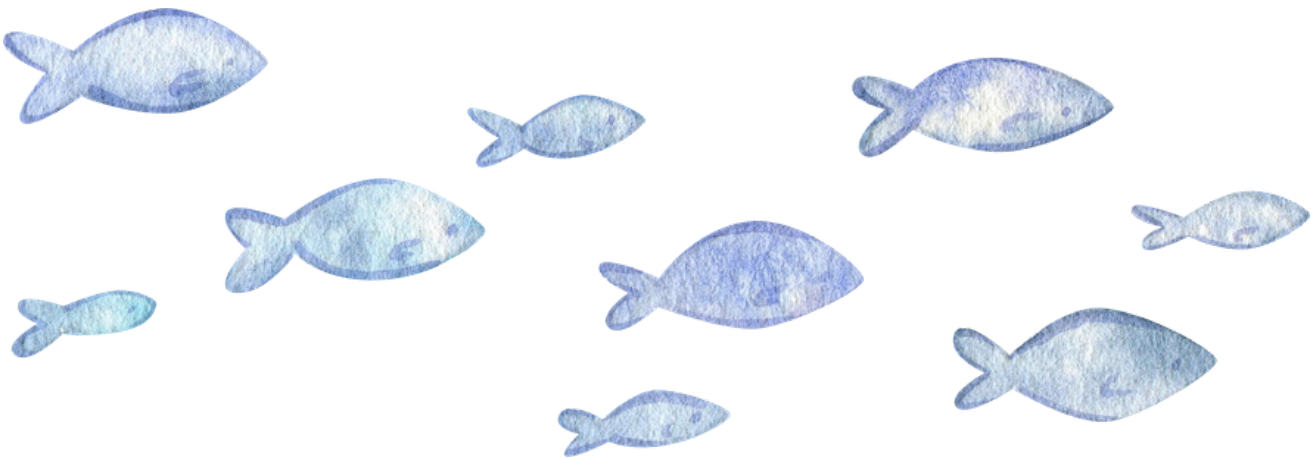


**Graduate Position:** [University of Alaska Fairbanks, College of Fisheries and Ocean Sciences](#)

**Job:** [Technical Specialist, Remote](#)

**Post Doc:** [Woods Hole Oceanographic Institution](#)

**Job:** [Maine Inland Fisheries & Wildlife Fisheries Biologist](#)



# Q & A

With Dr. Yuan Liu

By Katherine Helmer

*Dr. Yuan Liu is currently working as the eDNA Service Platform Manager at Gloucester Marine Genomics Institute (GMGI), a non-profit organization that addresses critical challenges facing our oceans, our health, and the environment through innovative research. eDNA, or environmental DNA, is the genetic material that animals leave behind as they move through their environment. In the marine world, eDNA is often left behind in mucus, skin cells, and feces and can be captured through water sampling. Dr. Liu presented at this past AFS SNEC Winter Meeting and summarized the lessons she learned while working on eDNA projects, the impact of eDNA on the marine science field, and the consulting services that she offers. [Read on to learn more about Dr. Liu's cutting-edge work in this rapidly expanding field!](#)*

## **Tell me a little bit about your academic and career journey.**

I grew up in the northern part of China in a landlocked city. I was never truly rebellious, but I was pretty determined to get out of my hometown to see a different world. At that time, I was thinking, “What’s more exciting than studying marine science?”—a topic I was completely unfamiliar with as a child growing up in an inland city. I applied and was accepted into an oceanography program at Xiamen University so I could follow this path. The university is in the southern part of China, so it was very different than what I grew up with. While I was there, I developed this obsession with studying tiny, invisible things like bacteria. To continue my education, I joined the PhD program at Stony Brook University. After the first-year core courses and qualification exam, I chose to study marine microbial ecology and started learning DNA-based methodologies to investigate these invisible life forms.



## **How did you choose eDNA as a study topic?**

For my Ph.D., my research focused on characterizing marine microbial communities. As I was wrapping up my dissertation, I started thinking about what to do next and applied for an NRC postdoctoral fellowship with the NOAA Milford Laboratory. While working as a contractor with NOAA, I started hearing and reading about eDNA everywhere. I have to admit; I was a bit skeptical at first. Once I learned a little bit about the topic, my initial reaction was, “Wait a minute, this is what microbial ecologists have been doing for decades. What’s all the excitement about?” But then, I realized that larger organisms also shed DNA into their environment, and that the same molecular tools we had long used to study microbial communities could be applied to other, more mobile organisms. That realization opened my eyes to the tremendous potential of eDNA as a tool for studying and monitoring biodiversity.



# Q & A

## What role does eDNA play in biological research?

- **Biodiversity monitoring:** eDNA often increases detection probability compared to a traditional survey. It's great for surveying rare or elusive organisms or detecting invasive species.
- **Conservation and management:** eDNA is a low impact and non-invasive monitoring method compared to other, more traditional methods. This is especially relevant for endangered species detection and for sampling in protected areas. Additionally, if you want to monitor restoration success, you can use eDNA sampling strategies before and after the restoration effort. This way, you can actually perform statistical analyses and test if your effort has been effective.
- **Ecosystem-level research:** eDNA scales across many taxa. Instead of using a traditional survey, which only focuses on specific species, eDNA can target all vertebrates. If you want to do a deeper dive into samples that you've already collected, you can just use different primers with the same eDNA extract to detect what you're looking for. That's something you can't do with other surveys - you can't, for example, recreate your trawling survey to catch cephalopods (not to mention that they're very fast swimmers...). You can use eDNA not only to assess biodiversity, but also to track organisms' temporal trends and spatial patterns, making the method highly scalable across entire ecosystems.
- **Integrated research:** In my opinion, eDNA works beautifully as part of an integrated monitoring framework. Because you are collecting water samples to look for eDNA, this kind of sampling protocol can be seamlessly added into other sampling trips. Field sampling is usually very expensive, but eDNA is very cost-efficient while having the added benefit of being much more sensitive.

## What are some lessons you've learned while working with eDNA?

1. **Don't overpromise, but be open-minded.** It's important to be honest and realistic about what this technology can offer. eDNA is a powerful ecological monitoring tool that can provide unique and valuable insights, but it should be viewed as one source of evidence among many. One best practice, when resources allow, is to compare eDNA results with traditional survey methods. However, no method provides a complete picture of an ecosystem, so careful data interpretation remains both challenging and essential.
2. **When you sample matters.** High current flow dilutes eDNA signals, and signals can change in strength through the seasons. Being mindful of the current and the seasons when interpreting data is crucial. In the summer, the eDNA shedding rate is higher because of the higher temperature. So, even though it may make sense to see a more abundant population of a species in an area because of the season, you also have to take the temperature into account.
3. **QA/QC is essential.** This includes paying attention to contamination control. With higher sensitivity comes higher risk of contamination – this method picks up everything! You cannot only apply the great things about eDNA analysis without considering what kinds of problems that level of sensitivity can cause.
4. **Quantification is complicated.** For some species, there is a strong association between the DNA signal and the number of cells or fish present. However, it's complicated because 1000 reads don't translate into 1000 individual fish. At the moment, we can use eDNA to confirm presence/absence, but not always quantity. There are ways to create models from, say, trawl data and eDNA data in tandem to make those conclusions, and researchers are working on that.



### **How does GMGI's eDNA Service Platform work and what are some of your goals?**

GMGI is a non-profit that aims to advance marine and environmental science through genomics. Under this umbrella, we have a very specific goal to meet the growing demand for eDNA in fisheries assessment and ocean resilience research.

Operationally, the platform provides end-to-end eDNA service, and that means that it functions as a pipeline that begins with a consultation. A key point of our role is to advise when eDNA is the right tool for a project and when it may not be. The consultative step builds trust and prevents misuse of the technology. We also talk about sampling techniques and field protocols during this step. Then, our partners provide samples for us, and we take everything from there. We perform DNA extraction, library construction, sequencing, and bioinformatics analysis. We focus on replication, trust, and transparency in reporting. We aim not just to generate data, but also to help our partners interpret what the data truly means in an ecological context. You can't just throw things at people and then walk away—helping our partners make sense of the data, especially at this beginning stage of technology adoption, is critical.

As the manager, one of my core goals is to position the platform as a scientific collaborator first and a service vendor second. I want our partners to see us not only as a lab that processes samples, but also as a collaborator in study design.

### **What do you want people to know the MOST about this platform?**

One thing I'd like people to know about the Platform is that I have a broader goal of helping increase the adoption of eDNA, and I'm happy to spend time supporting that effort. Many people already have an idea of how eDNA might help answer their questions, but they often need guidance on how to get started or how to design a project that will produce meaningful results. We want to be generous with our time and expertise so that people who may not have a strong background in molecular biology can feel confident enough to say, "Hey, I can give this a try." At its core, the Platform is here to lower barriers and help researchers, conservation practitioners, and resource managers make informed use of eDNA.

### **The field of eDNA is relatively new and is definitely expanding. Where do you see the field of eDNA going in the next few years?**

I think one of the biggest opportunities in the field is the continued growth of quantitative and computational skills. Bioinformatics, in particular, will remain in high demand. As the field continues to grow, I think there is a real need for greater standardization and clearer guidelines for analyzing and interpreting eDNA data so that results can be compared and applied more consistently across studies.

I also see the field expanding in several important directions. One is the increasing use of machine learning and artificial intelligence to help interpret complex ecological datasets. Another is the growing adoption of eDNA in environmental management and policy. For example, eDNA has now been written into Massachusetts General Laws. To me, that's really something! Scientists who work at the intersection of research, management, and policy can help ensure that regulators have the information they need to confidently incorporate eDNA into decision-making. Finally, I think eDNA will become increasingly integrated with traditional ecological survey methods. I don't see it as replacing conventional approaches, but rather complementing them as part of a multi-layered monitoring framework. In ecology, we rarely have access to the complete truth about a system. But the more lines of evidence we can bring together, the closer we can get to understanding what is really happening in the natural world.