



DEEP DIVE

INSIGHT FROM ATTENDING
THE WORLD AQUACULTURE
CONFERENCE

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SECTIONS

PART 1: ATTENDING A CONFERENCE

It can be a whirlwind, We compiled our biggest pieces of advice to help you prepare for and navigate conferences.

PART 2: U.S. AQUACULTURE INSIGHT

We list the biggest takeaways and resources from the conference.

PART 3: CA SEA GRANT FELLOWS CONFERENCE SURVIVAL KIT

What to bring for a smooth conference experience.





Introduction

In early March, the World Aquaculture Conference was held in New Orleans, Louisiana. Two of us California Sea Grant Fellows, Madelyn Roycroft and Josh Graybiel, were fortunate enough to attend for an immersive four days of aquaculture presentations, discussions, networking, and wonderful New Orleans food and music. We thought it would be worthwhile to share the insight and experience from this conference with the rest of our 2019 California Sea Grant Fellow cohort, since momentum is building to further develop coastal and offshore aquaculture in the United States and it will likely be a topic we come across (or continue to engage with) at some point in our careers.

Jump To

Part 1: [Attending a Conference](#)

Part 2: [U.S. Aquaculture Insight](#)

Part 3: [CA Sea Grant Fellows Conference Survival Kit](#)



Attending A Conference

Conferences are an important aspect of career development— they can improve your skills and knowledge of your field, and facilitate knowledge sharing and networking. Although the act of attending a conference can be relatively straightforward, getting the most out of the experience can be a little more challenging and comes with practice. In recognition of these challenges, we decided to provide some guidelines for maximizing your time and effort spent preparing for and attending conferences as a Sea Grant Fellow. Below, we cover topics such as choosing sessions, time management, prioritization, networking, and important steps to take after the event.

Choosing Sessions:

So you've done it-- you've registered for the conference, booked your flights, and arranged housing. Now the conference date is approaching and you decide it is a good time to check out the schedule and start thinking about what talks you want to attend. After navigating through a maze of hyperlinks and webpages you finally found it- the conference schedule! And as you start scrolling through the contents you realize that there are tons of talks that you want to attend, but to your dismay, all are at the same time! Unfortunately, our fellowship does not come with superpowers to be in two (or more) places at once, so one skill that we have the opportunity to further develop during this twelve months is learning how to **prioritize**.

Planning out your conference schedule ahead of time is an important way for you to get the most out of the experience. This process involves consulting with your supervisor or mentor and prioritizing some talks, sessions, or meetings over others that are equally as important or interesting. So, you ask, how do you prioritize? Below are some general guidelines that should help you with this decision process.

Priority 1: Special Meetings

Now this may seem counter-intuitive, but your first priority should actually be to attend meetings that are not necessarily a part of the conference itself. Crazy, huh? For many of us, conferences usually involve cramming in as many nerdy, science-y talks into one day. Well, say goodbye to that idea! Something that we learned quickly is sometimes the most valuable aspect of a conference is what happens *outside* of the conference rooms. Conferences are an excellent opportunity to schedule in-person meetings due to the fact that many folks with similar interests or collaborators from all over the country or world are in the same geographic location (which is usually very rare!). These meetings are typically arranged during conference sessions in private rooms elsewhere in the venue or in a more casual setting such as a cafe or a restaurant.

So, talk to your supervisor and ask them about whether there are any special meetings that you can attend. If so, **definitely** prioritize those events-- they are a great way for you to meet collaborators and hash out ideas in the same setting.



Priority 2: Required or Recommended Talks

Chances are that your supervisor will recommend at least a few talks or sessions for you to attend. If this is the case, you should probably prioritize those talks around the special meetings, and be sure to take detailed notes to share with them afterwards. If they are not familiar with the conference, share a copy of the schedule with them and ask if they can highlight any of the talks that they think would be useful.

But what happens if your supervisor *highly* recommends that you attend a talk that is at the same time as one of the special meetings? Step one: **don't panic**. You should still go to the special meeting, but your task is now to find out as much as you can about that talk after-the-fact. How, you ask? Go on a scavenger hunt. Try to track down the speaker after their talk -- they may be willing to give you the presentation, or find someone who did attend the talk and ask for their notes or for them to give you a verbal summary (and *definitely have your notepad ready*). You will have the best luck doing so either at the end of that specific session or during a networking/social/happy hour.

Priority 3 and Lower:

Once you have scheduled yourself for the special meetings and required or recommended talks, *now* you can fill in the remaining gaps. To aid in your decision-making, here are some guiding questions:

1. Will the talk improve your ability to perform tasks in your fellowship position?
2. Does the talk sound really interesting, but is not necessarily relevant to your current field?
3. Is the speaker someone that you have interest in networking with or asking questions?
4. Was the talk recommended by a colleague (but maybe does not interest you, specifically)?

Our recommendation is to try to attend at least one talk from each category. Some of our favorite talks from Aquaculture 2019 fit in category 2 (Louisiana alligator industry, anyone?)!

Also, it may be challenging to hop in and out of presentations. If this is the case, sitting down and absorbing an entire session or half a session can be advantageous.

And lastly, don't forget to schedule some down time! No matter how you slice it, conferences are exhausting. Make sure you leave some gaps where you can freshen up in your room or relax in a nearby cafe. This is also a good time to do some exploring and enjoy getting to know the culture of the town or city.



Getting the Most out of Talks

At this point in our career, most of us don't need a lecture on active and engaged listening during a presentation. In fact, we are probably hard-wired to scribble down as many notes as possible only to find that we rarely use them as soon as the page is turned. So, here is some advice to get the most out of the talks with minimal scribbling and maximum return.

Tips:

- Have a designated place to write notes (e.g. binder with loose sheets or notepad)
- Keep notes organized by writing down the speaker's name and contact information
- Summarize the topic of the presentation if their title is really long
- Is the talk high on your priority list? If so, write down at least one take-home message per slide. If not? Write down at least one take-home message for the entire presentation.
- Sometimes you can get access to the power point slides, and if this is the case focus your notes on what the speaker is saying not what is written down on the slides.
- The Q&A time is an important opportunity to dig deeper into the topic, next steps, and challenges or limits to some of the findings and is a great opportunity for take home messages.
- Consider the information provided in the context of your own research/position and note any relevancies, patterns, dissimilarities or contradictions.
- Take a mental note if you'd like to ask the speaker any questions or follow up after presentation.

Networking

The Setting

One of the most important parts of attending a conference is having the opportunity to network. However, choosing the best time to initiate an introduction and conversation tends to cause younger professionals a lot of anxiety. My recommendation is to put yourself in their shoes and think about when you would like someone to approach you during a busy conference. Right before an important session or even your own talk? Probably not the best idea. But, what is the one thing that is common amongst every conference attendee? The need to fill our stomachs! So, more often than not the best time for networking is during conference socials, happy hours, or meal times. Who can say no to having a conversation over some morning coffee, a lunchtime deli sandwich, or a happy-hour beverage? Investing some proactive attention and time into networking can provide an immeasurable benefit to your professional career.

The Who

Some conferences can host thousands of people. So, how do you decide who you should network with? We recommend that you come prepared with a list of people, whether it's someone who's abstract you came across that could help you with a project you are working on, or someone a colleague suggested you speak with. If you have no one to introduce you to the person, try to attend their talk and catch



them once their session is over. If they are swamped with questions, take a mental note of what they look like and try to track them down at a happy hour session or later on in the conference. Do you have a good friend who has been in the field or sector for a while? Have them show you around and introduce you to people - it helps break the ice and provide some context for both parties. And lastly, don't be afraid to talk to anyone, even the "celebrity" scientists or widely esteemed professionals. You never know what connections you might have with them or how interested that they might be in your own career. Who you decide to network with can shape the direction of your career--**be confident and strategic!**

Steps after the Conference

So you've returned back to the cubicle life, feeling inspired and exhausted, with a notebook full of notes and business cards in every purse and pant pocket you can imagine.* As much as you probably don't want to hear it - you still have a couple more steps to finish the job and ensure that all of your hard work does not go to waste.

*Pro Tip: Every night before bed gather all of your cards in one bundle & bind with a rubber band or binder clip

Follow-up Steps:

- Give yourself plenty of time to **type up your notes** (See Part 2 for our notes) from the conference. Use this time to explore the concepts brought up in the talks that interested you and learn more about the speakers' backgrounds.
- You know all those business cards you collected? If you want to maintain a connection with any of those individuals, **send follow-up emails** as soon as possible.
 - Pro tip: write a note on the physical card that says "follow-up?" and once you have, write "Y" next to it.
- **Share your knowledge.** Schedule an informative meeting for your colleagues to share some key take-homes. Use our CA Sea Grant 2019 Slack #events or #general channel to share some useful information or fun stories. Another option is to write a blog post about it!

Feeling overwhelmed from this information? See our [Conference Survival Kit](#) specially made for Sea Grant fellows!



WAS Aquaculture 2019 Conference

Now that we've provided some tips on attending a conference, we would also like to share what we learned from the World Aquaculture Society 2019 Aquaculture conference in New Orleans, LA. Below we summarize some important key messages, take-homes and proposed solutions surrounding the status of and barriers to aquaculture in the U.S. and California, including information about regulations, social licenses, sustainability, and economics.

U.S. Aquaculture Insight

In the United States, **people love their seafood**. We eat it in all sorts of ways, and in different styles like sashimi, poke, in tacos, and even in soup. However, what you may not know is about half of all seafood produced each year comes from farms and this trend will likely continue due to stagnating landings from world capture fisheries and an increasing demand from population growth and dietary preference. Some of the most beloved seafood options like shrimp, salmon, and tilapia are predominantly sourced from aquaculture farms in other countries.

In 2016, the U.S. imported 90% of its seafood and over half was from aquaculture production resulting in a \$14 billion trade deficit. (NOAA, 2017)

This trade and production imbalance has motivated a new wave of interest to further develop and expand aquaculture production in the United States, but before this can happen complex barriers like governance, social perception, economic forces, and sustainability issues will need to be addressed all of which were topics of discussion at the World Aquaculture Society conference.

Barriers to Aquaculture in the U.S. and California

Regulation:

In order to get approval for an offshore or coastal aquaculture farm in the United States, a host of permits from local, state, and federal agencies are needed. This can be a lengthy and challenging process for proposed projects because aquaculture farms must get approval for a proposed site, structure, and operations, and the approval process is risk averse. Each one of these activities must mitigate, monitor, and comply with federal acts (e.g. the Marine Mammal Protections Act, Clean Water Act, etc.), with state regulations like CEQA review, and must coordinate with local, state, and federal agencies for planning and compliance.

In the state of California, two shellfish offshore and coastal aquaculture operations have successfully navigated this permitting process – Catalina Sea Ranch, and SB Mariculture – while two other operations – Rose Canyon and Ventura Shellfish Enterprise – are at various stages in their multi-year permitting and planning process.

SOLUTION SPACE

To help improve the regulatory review process and management of aquaculture farms, a suite of tools, and management frameworks are being constructed in response to the complexities of coastal resource management:

- The release of [NOAA's Ocean Reporting tool](#), among other new marine spatial planning tools in the works, will provide a huge leg-up for overcoming the hurdle of competing uses of ocean space for aquaculture.
- Implementing Adaptive Management Principles: Just as ocean farmers constantly adapt to changing environmental conditions, whether it is changing their gear type or even which species they are farming, management, permitting and regulations will also need to be adaptive and nimble.
- Using an [ecosystem approach to aquaculture](#), as suggested by the Food and Agriculture Organization of the United Nations (FAO), is a strategic framework to help manage the complexities of coastal ecosystems and human dimensions by integrating science, policy and management.

Social License

Perhaps the most challenging approval process for aquaculture farms is the need to gain support from local stakeholders, a process sometimes referred to as obtaining a 'social license'. Overall, public perception of the aquaculture industry is negative ([Froehlich et al. 2017](#)). Aquaculture production issues such as pollution, disease, and escapes fuel the public debate on aquaculture farming, while proposing a site for coastal or offshore aquaculture ignites stakeholder debate on ocean use. For example, any offshore or coastal aquaculture site could conflict with a number of stakeholder activities like kayaking, surfing, diving, whale watching, and recreational and commercial fishing. Resolving these tension points, sometimes referred to as NIMBYism, is a challenging process.

SOLUTION SPACE

To help engage stakeholders in a constructive manner, stakeholder-driven planning processes are needed to resolve conflict and create a participatory driven process. Understanding and accounting for public perception of aquaculture will be a crucial component to the success of both small- and large-scale ocean farming.

- To help communicate aquaculture issues and opportunities to the public, an online public resource, [Aquaculture Matters](#), was created to highlight current aquaculture projects in the state of California.
- The [Ventura Shellfish Enterprise](#), VSE, created a participatory process for offshore or coastal aquaculture siting by establishing working groups and public outreach opportunities that targeted key stakeholder group input like fishermen. The process also encourages fishermen to become aquaculture farmers as a way to diversify variable fish landings with predictable harvests.



Economic

In order for aquaculture in the United States to succeed, it must find a competitive advantage over imported seafood. The U.S. imports seafood products that are cheaper, easily substituted, and consumers find these substitutes to be of similar quality. As a result, imports can outcompete domestic products in the marketplace. For example, the U.S. catfish aquaculture industry has a history of leveraging tariffs and legislation tools to attempt to reduce imports of a cheaper imported substitute, pangasius, with largely unsuccessful results. Similar patterns can be found for salmon, shrimp and tilapia farmers as well.

SOLUTION SPACE

To overcome market forces and barriers to entry, diligent market analysis and planning is necessary. To glean insight, highlighted are successful domestic aquaculture models:

- **Obtaining a premium** where fresh matters, the bivalve (mussels, clams, oysters) aquaculture industry in the United States annually produces nearly \$240M in value. ([NOAA](#), 2017) Recently, entrepreneurs are looking to expand on industry success by moving offshore and growing at scale.
- Another way to overcome market forces is to **diversify the business model**. Algae farming can help serve multiple needs: energy production, feed input for aquaculture and livestock farming, and human consumption with value added products like seaweed snacks!

Sustainability

Consistent with other forms of livestock agriculture, coastal and offshore aquaculture, have environmental sustainability issues. Key areas of concern for regulators and stakeholders that are addressed during the permitting process are: waste streams that can pollute the surrounding areas, disease outbreaks, entanglement of marine mammals, habitat degradation, farm densities, and the potential for aquaculture organisms to escape and compete with native wild organisms or breed with wild populations. All of these issues prevail across the industry, which emphasizes the importance of policy and regulations to ensure that: if aquaculture is to succeed, it does so sustainably. Where governance resources are limiting, certification organizations can step in to help elevate the performance of aquaculture farms. However, it is unclear whether farmers can capture a higher premium for their product once they make the necessary investments to meet certification standards. As a result, certification organizations are unable to adequately make the business case for aquaculture sustainability.

One of the most challenging sustainability performance issues for the aquaculture industry is the fish feed ingredients. At the moment, the ingredients of fish feed are becoming an unsustainable source as it relies on the input of other fish and terrestrial agriculture products like soy and corn. Predicted



expansion of finfish aquaculture will put even more pressure on finite marine resources, and/or agriculture production, which will further increase the industries environmental impact.

SOLUTION SPACE

There are environmental benefits for developing a low impact, well planned and efficient aquaculture industry. Some of the highlights include:

- Some environmental organizations ([WWF](#), [TNC](#), [Conservation International](#)) are looking into the potential for aquaculture to help improve conservation efforts. For example, the role that aquaculture can serve for habitat, ecosystem services, carbon storage, and food resilience.
- [Life-Cycle-Assessments of aquaculture feed](#) ingredients are helping to examine the tradeoffs between using marine resources, and agriculture substitutes to drive sustainable decision making for an expanding demand for aquaculture feed in the near future. These results are also spurring research and innovation into feed formulation.
- Continued research and development into the aquaculture industry (physiology, genetics, design, technology, etc.) will help to lower impacts, and increase production. For example, continued improvement of breeding programs helps to reduce the amount of feed and/or resources it takes to produce biomass for aquaculture farmers (Feed Conversion Ratios).
- Non-profit organizations (WWF, [Seafood Watch Program](#), Conservation International) are working with governments to help improve sustainable management, regulation, and policy guidance of aquaculture. This approach contrasts the certification model which requires farmers to make investments into farms, and pay for the certification scheme – pinching already tight margins.

Conclusion

Aquaculture is a complex and challenging topic for natural resource managers and efforts to gain momentum are likely to increase in the coming years. The U.S. has one of the highest demands for seafood, especially shrimp and salmon, and the U.S. relies heavily on foreign aquaculture farmers to produce. As a result, entrepreneurial interest for domestic production will continue. Natural resource managers will play a key role in ensuring protection of coastal resources and ecosystems, while guiding the industry towards a sustainable pathway. The industry will need to continue to overcome challenging regulations, negative social perspectives, economic hurdles, and improve the sustainable production of farmed species, but the work and conversations presented at the World Aquaculture Society Conference showed there are active, evolving solutions.



CA Sea Grant Fellows Conference Survival Kit

Day-of Supplies:

- Three-ring binder
- Loose leaf paper for notes
- Your personal agenda (printed or handwritten), placed in the clear front pocket of the binder
- Section divider or small folder to store receipts
- Three pens
- Business cards
- Wallet (especially driver's license or other form of identification)
- Binder clip, rubber band, or extra binder section divider for business cards you collect
- Reusable coffee mug*
- Reusable water bottle*
- Snacks*
- Floss
- Breath mints
- Deodorant
- Phone charger
- Tote bag or nice backpack (to carry all of the above!)

*Sometimes conferences have regulations for what attendees can bring. Check first if this is allowed.

Clothes:

It is best to come prepared with a variety of outfits (guys, this includes you, too!) or outfits that can be easily dressed up or down. You never know what meeting you will be thrown into or how far you might have to walk to find that really good restaurant that everyone keeps raving about. We recommend erring on the side of comfortable formal/business casual outfit, but give yourself the option to adjust if need be.

Also, it is always easier on your body to stick to your normal routine as much as you can when you travel. If you work out regularly, bring some exercise clothes with you and take advantage of the free gym (if there is one) or jog around the town. Your body will thank you.

Other Recommendations:

Cell Phone - Try not to use your cell phone it during the conference unless you need to for coordinating social events. Be in the present moment!

Computer – Don't bring or use your computer unless you need it to prepare a talk or meeting. Plus, who wants to carry around a clunky computer all day?

