

# A Next Gen Seafood Industry: Framing a Career-Development Program for those Earning a Living off the Water

## PROJECT SUMMARY REPORT



Georgia shrimper, clam farmer, and blue crabber. Image credits: Marine Extension and Georgia Sea Grant

## AUTHORS

Bryan Fluech, *Marine Extension and Georgia Sea Grant*

Tom Bliss, *Marine Extension and Georgia Sea Grant*

Gabriela Welch, *Marine Extension and Georgia Sea Grant*

Matt Gorstein, *South Carolina Sea Grant Consortium*

Graham Gaines, *South Carolina Sea Grant Consortium*

Sara Mirabilio, *North Carolina Sea Grant*

## ACKNOWLEDGEMENTS

This project was supported with funding from the National Sea Grant Office (NSGO) within the National Oceanic and Atmospheric Administration (NOAA). The statements, findings, conclusions, and recommendations are those of the author(s) and do not reflect the views of NSGO or NOAA.



## EXECUTIVE SUMMARY

Despite the economic and cultural importance of the commercial fishing and seafood industry in the south Atlantic states of North Carolina, South Carolina, and Georgia, the region, like other parts of the United States, is experiencing an aging workforce collectively known as “graying of the fleet.” A younger generation of fishers and seafood workers are not entering or remaining in the industry as in previous generations and is one of many threats that affect the long-term viability of these sectors. At the same time, shellfish aquaculture, such as clams and oysters, continues to gain traction as a viable alternative seafood industry that also provides valuable ecosystem services, and the for-hire and recreational fishing sectors also contribute significantly to the region’s economy given its popularity as a major tourism destination.

Sea Grant has responded by offering a number of workforce training programs in recent years but recognizes the need for more comprehensive input from the region’s fishing and aquaculture sectors to better meet current and future needs. This collective feedback, along with identification of other workforce development initiatives happening across the country will help Sea Grant identify the most effective means of recruiting, training, and supporting the next generation fishing, aquaculture, and seafood industry-workforce in the south Atlantic region.

In anticipation of potential funding from the Young Fishermen's Development Act, this project’s goal was to create a planning framework for the development and implementation of commercial fishing, for-hire, and aquaculture workforce development programming in the south Atlantic region. After updating an inventory of known fishing/aquaculture workforce development programs in the U.S. and abroad, Sea Grant specialists from North and South Carolina and Georgia facilitated eight mixed-sector focus groups between October 2021 and January 2022. The purpose of the focus groups was to collect feedback about current workforce status, industry training needs, and challenges and opportunities for workforce development. Across all three states, there was broad consensus that “*just being a good fisherman*” is not enough to prosper in the industry anymore due to the multitude of challenges associated with it. Demonstrating sound business practices and being financially literate, along with possessing a mix of relevant technical and interpersonal skills are needed to prosper.

There was general agreement that workforce training will be an important aspect of supporting the next generation of individuals making a living off the water. However, participants from all three states shared the sentiment that training alone will not be sufficient to sustain the industry given the multitude of external barriers affecting entry and participation in these sectors. While discussed barriers were not uniform across all three states or sectors, lack of adequate financing and insurance coverage for many

sectors, as well as complex regulations and permit costs - even affordable housing - were identified as factors impeding the viability of the industry.

Based on gaps between existing workforce training programs and feedback from the focus group participants, each Sea Grant program developed short, medium, and long-term strategies to help create and/or expand workforce training programs at a local and state level. Given the number of common workforce themes that emerged from all three states (*i.e., safety, financial literacy, business management, apprenticeships, career pathway programs, and technical trainings*) there also are also opportunities for Sea Grant and partners to leverage resources on a regional and, potentially, a national level to help develop new or adapt existing programs/resources that will be broadly beneficial across the region. Identification of partners and funding to support new and existing programs, whether through grants, donations, sponsorships, and/or in-kind contributions will be needed. Ongoing communication regarding workforce development opportunities, barriers, successes, and/or lessons learned also will need to be shared between Sea Grant, industry, and their other partners. Furthermore, strategies to raise awareness of and promote fishing and aquaculture career paths, as well as recruit new workforce members beyond traditional coastal areas, will need to be expanded. While Sea Grant may not be able to adequately address all the broader socioeconomic and regulatory challenges identified by focus group participants, staff should continue to seek out and foster partnerships, resources, and other opportunities to help mitigate these barriers, and better facilitate fishing and seafood workforce entry and retention in the south Atlantic region.



An oyster farmer in South Carolina works his gear.  
Image credit. South Carolina Sea Grant Consortium

## INTRODUCTION

The coastal states of North Carolina (NC), South Carolina (SC), and Georgia (GA) have deep ties to its marine fishery resources. Historically, the commercial, recreational, and subsistence harvest of shrimp, blue crab, oyster, and a variety of finfish, from flounder to snapper, has played prominent roles in shaping the economic and cultural fabric of coastal communities in the three states. This diversity of marine resources coupled with the region's popularity as a prime tourism destination also supports prominent for-hire and recreational fishing sectors. As with much of the nation, an aging workforce is one of many challenges facing the commercial fishing and seafood industries in these states. There is increasing concern that a younger generation of fishers is not entering or remaining in the commercial fishing and seafood industry.

NC, SC, and GA Sea Grant have responded to these “*Graying of the Fleet*” concerns through various measures: offering networking and skill-building training for young/new fishers, developing a commercial fishing career pathway program for local high school students, and assisting local not-for-profit fishing associations build their capacity to better serve their industries, to name a few. At the same time, regional Sea Grant programs also have increased training and technical assistance for their shellfish aquaculture industries as clam and oyster aquaculture proves to be a promising supplement or alternative to commercial fisheries professions in the region.

Despite these initial efforts, a more comprehensive strategic framework that actively and meaningfully incorporates feedback from the region's industries is needed to ensure that the next generation workforce in these sectors has access to the tools and resources necessary to have economically viable businesses working in concert with proper resource stewardship. Simultaneously, numerous examples of career development programs currently exist across the country that may be beneficial to the region's industries. Engaging local industry members with what they see as the most pressing training needs and formats, coupled with characterizing what types of resources already exist, will help Sea Grant identify the most effective means of recruiting, training, and supporting the next generation seafood industry workforce in the south Atlantic region.

The goal of this project was to create a planning framework for the development and implementation of commercial fishing, for-hire and aquaculture career development programming in the south Atlantic region to better prepare for and respond to potential funding from the [Young Fishermen's Development Act](#)<sup>1</sup> (YFDA). We accomplished this goal by:

---

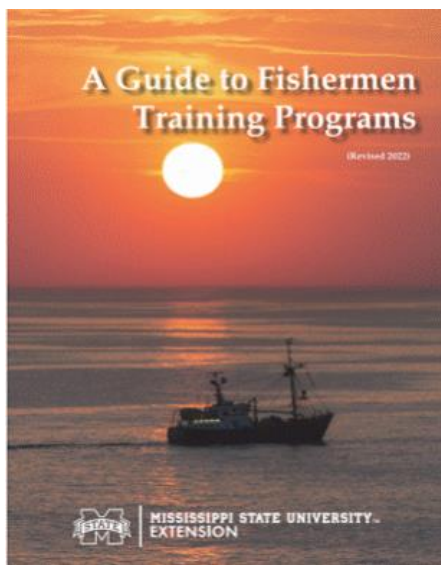
<sup>1</sup> As of June 2022, no funding has been appropriated to the YFDA, but regardless of if this eventually happens or not, information collected during this project is still intended to support future workforce development initiatives in the southeast Atlantic region.



- 1) Reviewing and assessing existing industry-related career development resources that can be utilized for future career development initiatives in the region
- 2) Organizing focus groups with fishing and aquaculture industry representatives from NC, SC, and GA to solicit input on what is needed to build effective career development initiatives in the region, and
- 3) Conducting a gap analysis to identify specific short-, medium-, and long-term strategies that can help support and sustain industry-desired workforce development needs across the region.

## EXISTING CAREER DEVELOPMENT OPPORTUNITIES

### (OBJECTIVE 1)



*Image credit:  
Mississippi State University Extension*

A variety of career development programs relevant to the commercial fishing, aquaculture, seafood, and for-hire charter sectors currently exist in the United States and abroad. With input from the Sea Grant Fisheries Extension Network, Mississippi/Alabama Sea Grant developed a [comprehensive guide](#) to fishermen training programs in the U.S. in 2020, which has since been updated in 2022. Based on this guide and additional research, we have identified 46 training programs, and the list continues to evolve as new programs are developed and some existing programs end. Formats for such initiatives vary widely including, but not limited to, workshops and field courses, high school and college courses, online classes and resources, conferences, apprenticeships/fellowships, and certification programs. Such programs can range from a few hours in length to a few years in duration

depending on the program and topics covered. Some efforts are highly structured and timed while others are self-paced. Likewise, costs for such training programs vary significantly from free-of-charge to several thousands of dollars per participant. The majority of these training programs are for participants 18 years and older, but programs do exist that target high school and even elementary aged youth. Several organizations coordinate such training programs including industry associations, Sea Grant programs, universities and technical colleges, high schools, non-academic research institutions, NGOs, and state or federal government agencies. Some programs are grant funded while others generate program support through participant fees or, even, a combination of both. Content for training programs also varies based on the intended audience and format, but examples of subject matter addressed include fisheries/aquaculture science and management, business planning, marketing,

seamanship and navigation, safety, fishing/harvesting skills, net mending, networking, public speaking, and leadership skills. While the focus of this project is on fishing, aquaculture, and seafood workforce development, we also reviewed information on agriculture workforce development programs for additional reference given the similarities between the industries. For example, financial literacy, business management, marketing, legacy planning, and apprenticeships are included in several ag-based programs that we examined, which may be useful for context for future fishing/aquaculture training programs. These programs along with an analysis of the fishing and aquaculture programs we identified in the U.S. and abroad are summarized in a table format [here](#). Table 1 highlights examples of workforce development training programs currently offered in the south Atlantic region.

Table 1: Examples of Industry-Focused Workforce Development Programs in the South Atlantic

| <b>Program</b>                                    | <b>Summary</b>   |
|---|--|
| North Carolina Shellfish Farming Academy (NC)     | 12-week field and classroom-based oyster and clam mariculture operations training offered through Carteret Community College   |
| Fish Camp (NC)                                    | 3-day commercial fishing training organized by North Carolina Sea Grant; addresses finances, business management, public speaking, fisheries management, safety                            |
| Basic Commercial Fisherman Program (GA)           | High school/technical college dual enrollment commercial fishing career pathway program; addresses safety, fishing methods, fisheries management   |
| Commercial Fishing Drill Conductor Training (GA)  | 12-hour classroom/hands-on safety training program sponsored by Alaska Marine Safety Education Association in collaboration with Marine Extension and Georgia Sea Grant                    |
| Seafood HACCP Training (Regional)                 | Seafood safety procedures and regulations training for seafood wholesalers/dealers. One to three-day classroom training  |
| Florida-Friendly Fishing Guide Certification (FL) | Online training course developed by Florida Sea Grant targeting for-hire charter captains; addresses sustainable boating and fishing techniques  |
| Florida Youth Maritime Training-FYMT(FL)          | Hands-on training and apprenticeship targeting at-risk youth programs run by non-for-profit FYMT; addresses seamanship, vessel technician skills, safety, and commercial fishing practices |

## INDUSTRY FOCUS GROUPS (OBJECTIVE 2)

Eight focus groups were conducted between October 2021 and January 2022 (Table 2). Facilitation of the focus groups was led by Sara Mirabilio, Scott Baker, and Eric Herbst in North Carolina, Graham Gaines and Matt Gorstein in South Carolina, and Bryan Fluech, Tom Bliss, and Gabi Welch in Georgia. Each Sea Grant program tailored the makeup of their focus groups according to their own unique fisheries/aquaculture sectors.



Fishing and aquaculture industry members discussing workforce needs.  
Image credit: Marine Extension and Georgia Sea Grant

However, regardless of who participated, each meeting focused on three main topics: 1) current workforce status; 2) industry training needs; and 3) challenges and opportunities for workforce development. Meetings were recorded and transcribed using the transcription program Otter ai. The following information summarizes the collective results of the eight focus groups. A summary of each state's meetings can be found in Appendices I,II and III.

### Current Workforce Status

There was general agreement among meeting participants in all three states that there is a lack of consistent, reliable help in the fishing and aquaculture industries, which threatens the long-term viability of these sectors. References to lack of interpersonal skills and decline in worker quality that were once synonymous with the broader fishing industry were commonly mentioned by participants. Many participants indicated they have had to modify how they operate in recent years to accommodate for these shortcomings. Participants mentioned downsizing operations (*ex: reducing the number of vessels or effort*), changing how they pay their crews (*off the top versus a percentage*), and leaving or switching fisheries altogether. For example, one North Carolina participant commented that he left shrimping to begin working in shellfish because of not being able to find reliable crew members. Two other participants made the following statements.

*“The folks are tied at the dock because they can’t find the work. So you’ve got people who want to do the work, you have to work for more work. So you’ve got all these boats with no crews. You may have a captain, but who can work with that?”*

South Carolina Participant



*“I’ve seen a major change in the workforce in my lifetime in commercial fishing industry. When I was younger, the quality of individual and commercial boats was much higher than it is today. On the larger boats, I see a constant problem: substance abuse. It’s hard to keep decent people on your boats.”*

North Carolina Participant

Table 2: Focus Group Participant Summaries

| <b>LOCATION</b>    | <b>NUMBER OF PARTICIPANTS</b> | <b>INDUSTRY REPRESENTATION*</b>   |
|--------------------|-------------------------------|---|
| Wanchese, NC       | 8                             | Seafood wholesale/retail, commercial finfish, for-hire charter, technical college, Latino community organization, and oyster aquaculture                        |
| Morehead City, NC  | 9                             | Oyster aquaculture, wild harvest oyster, community college, commercial hard blue crab and finfish, seafood retail, for-hire charter, and attorney               |
| Wilmington, NC     | 7                             | Commercial shrimp and finfish, seafood retail, for-hire charter, community college, and oyster aquaculture  |
| McClellanville, SC | 6                             | Commercial shrimp, soft shell blue crab, clam and oyster aquaculture  |
| Beaufort, SC       | 9                             | Commercial shrimp, hard blue crab, bait harvester, seafood wholesale/retail, and oyster aquaculture   |
| Georgetown, SC     | 5                             | Fishing association, seafood retail, youth fishing educator, and non-profit community organization  |
| Townsend, GA       | 7                             | Clam/oyster aquaculture, wild harvest oyster, commercial shrimp, hard/ soft blue crab, finfish, seafood wholesale/processor, and retail, and seafood restaurant |
| Brunswick, GA      | 7                             | Commercial shrimp, jellyfish, hard blue crab, for-hire charter, and seafood retail  |

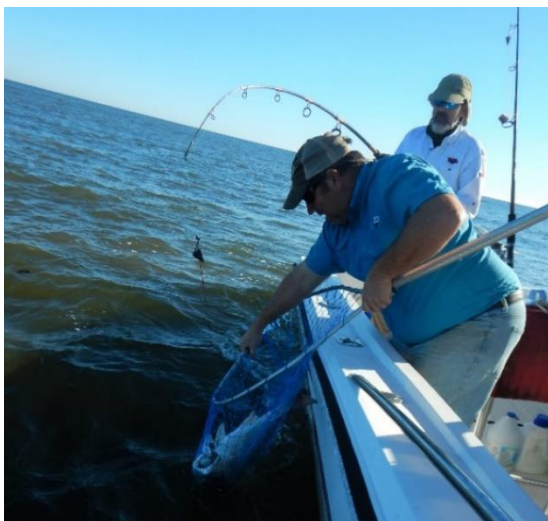
\*Several participants are involved in multiple fisheries and/or industry sectors

### Workforce Development Training Needs

Focus group participants identified several training needs that would be helpful to those earning a living off the water. Given the nature of work involved with working on and around the water, safety (*first aid and/or boating safety*) was acknowledged as an essential skill regardless of the sector in all three states.

*“But more importantly man, I mean, really, honestly, it's kind of hokey, but safety is more important. I mean, at the end of the day, man, you got three people from DC that don't know anything about the ocean, and you got to bring them back in one piece and catch 'em fish in four hours and put it all in a nice little basket.”*

North Carolina participant



*A charter captain helps his client land a redfish. Image credit: Marine Extension and Georgia Sea Grant*

There was also a general sentiment expressed that just being a “*good fisherman*” is not enough to prosper in the industry anymore due to the multitude of challenges associated with it. Demonstrating sound business practices and being financially literate, along with possessing a mix of relevant technical skills, are needed to prosper. While not addressed in every focus group as a specific training need, the growing importance of communication and interpersonal skills also was acknowledged as being increasingly important regardless of the sector. In regard to business management-related skills, topics such as business type formation (*LLC versus sole proprietor*), tax

reporting, employee recruitment and retention, budgeting, marketing, and customer service training were mentioned at some point during the focus groups.

*“You can't live paycheck to paycheck, week to week. You have got to put money back, because you know, you're gonna throw up. That wheel is gonna get tore up. Net's gonna get tore up. Wintertime, you got to do upkeep. That's basically I tell you, the worst thing on them boats is not to have enough money fishing all year, wear it out and then not have really the right kind of money to get it back up going again.*

*It don't get better. It just snowballs on you”*

Georgia Participant

Specific technical skills associated with various fishing, aquaculture, and seafood sectors (*ex: net mending in the shrimp fishery or grow-out methods in shellfish aquaculture*) were mentioned during several meetings, but the need for broader technical skills that could apply across multiple sectors also were identified as being increasingly important as traditional industry support businesses have declined in recent years. Welding, carpentry, marine diesel mechanics, electrical work, and fiberglassing were examples of valuable skills to possess.

*Net makers. There' not many of them. Nobody's going into that either.... But you know, if somebody wanted to become a net maker, could make really, really good money.*

South Carolina participant



*A training participant in North Carolina practices his net mending skills.  
Image credit: North Carolina Sea Grant*

Regardless of the sector or skill, the notion of field-based, hands-on training was recognized as being critical for workforce development in the fishing and aquaculture industries. Partnering with well-known and respected industry members to lead and/or assist (*assuming they are properly compensated*) with relevant technical training programs was one idea suggested in Georgia. The potential for apprenticeship programs also was addressed in each of the three states as a potential means of providing this type of training for future workforce members. There was general agreement about the potential benefits for implementing such programs, but participants in all meetings also raised several concerns. Proper liability and

workers compensation coverage would need to be in place for most fishers/harvesters to consider taking on an apprentice. Details about duration and expectations from both parties would also need to be thoroughly vetted. Several participants in the Georgia focus group mentioned the desire to have potential participants already trained to a certain level before taking on anyone to minimize disruptions to their operations. Furthermore, due to concerns about workman's compensation and liability insurance, participants in South Carolina and Georgia both acknowledged that such programs may be better suited for shellfish aquaculture operations versus shrimping vessels.

*So if someone gets hurt... and I'm talking from personal experience, it hurts. 'Cause maritime law... they got you. It doesn't matter how stupid they do something, it's your fault. Boom. That's one big deterrent for people coming into this thing."*

South Carolina participant

### Challenges and Opportunities

Focus group participants generally agreed that workforce development training is an important aspect of supporting the next generation of individuals making a living off the water. However, participants from all three states strongly communicated the sentiment that training alone will not be sufficient to sustain the industry given the multitude of external barriers affecting entry and participation in these sectors. Without trying to resolve some or all of these other issues (*many, which fall outside of Sea Grant's purview*), training programs will most likely have minimal impact, particularly for those new to the industries. While discussed barriers were not uniform across all three states or sectors, lack of adequate financing and insurance coverage for many sectors and complex regulations and permit costs were most often identified as factors impeding the viability of the industry. For example, one South Carolina participant commented it was *"contradictory for federal agencies to ask current struggling fishermen to train new industry members when, for so many years, government agencies restricted commercial fishing through regulatory actions."* Other significant barriers mentioned that affect the ability to recruit, hire and maintain an adequate workforce were lack of affordable housing (*particularly as the coast experiences more growth*), declining infrastructure (*vessels, shoreside support or access to waterways*), rising operating costs, and inconsistent job security for workers.

*"If there's no place for a fleet to be, yeah, then there's nothing to attract anybody. So, you have to have a place for the boat... you have to have boats."*

South Carolina participant



Shrimp boat docked at a South Carolina dock. Image credit: South Carolina Sea Grant Consortium



*“I do think for a lot of young people, the sort of manual labor aspect of some of the fishing and aquaculture, they don't see a future in it, or they don't, they're not attracted to it. But I also think there's an underlying problem with help, and that is housing. And I know that I mean, it's, it's, it's true everywhere. I mean, it's very true in Hatteras, but it's very true in Nags Head, and all around the area, that if you had some kinds of dorms or places where you could offer an apprenticeship where you knew that you could offer housing, as well, I think you would find seats for those chairs. But without that, it's very difficult because you say, ‘Oh, here, ... I've got a \$15 an hour job. Do you want it?’ And in reply, ‘Well, where am I going to live?’ You know? So, I think that's, that is, is really very intertwined with our housing problem.”*

North Carolina Participant

*“Though, getting financing for boat, you know, banks and stuff, you know, nowadays, you know, you can't get financed for a shrimp boat. You know, so if you got a shrimp boat sitting here for, you know \$300,000, you know, for a nice steel hull, you know, freezer boat, you go out and make that and pay it off in a couple of years, but the bank won't loan you the money.”*

Georgia participant



*A seafood worker washing off clams. Image credit: Marine Extension and Georgia Sea Grant*

Despite the numerous barriers and challenges mentioned by participants, many acknowledged the ability to still make a profit from working off the water. This career choice (*and lifestyle*), which participants acknowledged requires hard work, long hours, and discipline, is not for everyone, but may be appealing to certain audiences. There was general sentiment that identifying and recruiting future workers will need to extend beyond just the immediate coastal communities to ensure employers are able to attract “go-getters” with a strong work ethic and desire to work in such a field. Veterans, immigrant labor, non-college bound, or non-traditional students, were all mentioned as potential workforce candidates to consider. Furthermore, there were comments made by participants from all three states that younger generations do not often see a future in the fishing and aquaculture industries. It

was suggested that the promotion and development of industry-related career paths and opportunities should be enhanced and started at an earlier age. Several comments also were made about the importance of career exposure and connections to conservation



and stewardship at the high school, middle, and, even, elementary school level to help mitigate this misconception. Interestingly, in the North Carolina meetings, some participants remarked that it is often the parents “*pushing their children away from fishing and vocational/technical training*” and more towards traditional four-year college programs. While this issue was not specifically discussed during the Georgia meetings, it has been brought up by other industry members during similar Marine Extension and Georgia Sea Grant-sponsored projects.

*“Go in and speak to the kids, at middle school level and up about opportunities that's available for you. You know, fishing, seafood, oyster, crabs, whatever, and make them aware that there's other opportunities other than, you know, going to college. If you want to go to college, then you can still come back and get that, but there's a lot of opportunities. You know, use the seafood area, the oceans, the waters that we have here... use those things to your advantage.”*

South Carolina Participant

Several meeting participants also acknowledged the growing demand and support for local seafood and related businesses, and opportunities associated with this continuing trend. Participants in Georgia discussed the importance of developing niches to help diversify their operations and make them stand apart from their competitors. Direct marketing, value-added products, and/or venturing into eco, heritage and/or agritourism were all mentioned as potential considerations for those working in fishing and aquaculture.

*“Yeah. Eco tourism is big. So I'll say while a lot of this stuff's on the downslide, ecotourism it's huge. And the umbrella. Yeah. And what you can do in the Ecotourism world now is almost unlimited... if you can come up with an idea. And you can do it safely. And you can do it well, and you can do it over and over again, repeatedly. You can get people to get on board and do it.”*

Georgia participant

## GAP ANALYSIS

### OBJECTIVE 3

Based on gaps identified through focus group feedback and current workforce development efforts within the region and abroad, each Sea Grant program generated specific short-, medium-, and long-term strategies where they can help support and/or facilitate industry-desired workforce development needs at a local and state level. Short-term strategies were defined as within the next year, medium-term strategies were within one to two years, and long-term strategies were three to five years. Each state also determined subjectively whether the strategies would involve a low, medium, or high effort and cost to implement.



A Georgia Sea Grant Specialist teaching student about shrimping.  
Image credit: Marine Extension and Georgia Sea Grant

### SHORT-TERM STRATEGIES

#### North Carolina

- Identify, share, and/or develop relevant fishing/aquaculture business fact sheets/resources to assist individuals wanting to enter and/or expand their businesses. Examples could include, but not be limited to, business set up, finance/loan support programs, creating business plans, succession planning, and similar. (*low cost, moderate effort*)
- Develop an advisory group (*within and outside of industries*) to identify funding opportunities and to provide input on how to enhance/expand workforce development opportunities. (*low cost, low effort*)
- Secure external funding for NCSG to host 2023 Fish Camp and NC Shellfish Academy training. (*moderate cost, moderate effort*)

#### South Carolina

- Continue to support the McClellanville Watermen's Association and the Town of McClellanville in their endeavors in legacy planning for their working waterfront (*no cost, low to moderate effort*)
- Facilitate learning exchanges between the commercial fishing and seafood sector, agribusiness specialists, and insurance underwriters to work toward developing improved insurance options (*moderate cost, moderate effort*)
- Complete blueprint and feasibility study for potential commercial fisheries and aquaculture training program in McClellanville (*low cost, low to moderate effort*)

- Continue to support the development of the Gullah Geechee Seafood Trail (*moderate cost, moderate effort*)
- Develop internship opportunities to enhance diversity of mariculture workforce in SC through partnership with Minorities in Aquaculture (*low cost, low to moderate effort*)
- Develop and expand aquaculture toolkit resources to aid industry entrants in navigating permitting, seed procurement and business planning (*no cost, low effort*)

### Georgia

- Identify and compile existing assets on the Georgia coast (*and beyond*) that can contribute technical expertise, funding, and/or other resources etc. to support relevant workforce training opportunities for the industry. (*no cost, low to moderate effort*)
- Identify, share and/or develop relevant commercial fishing/aquaculture business fact sheets/resources to assist individuals wanting to enter and/or expand their businesses. Examples could include, but not be limited to: business startup, finance/loan support programs, permitting requirements, creating business plans, succession planning, etc. (*no cost, moderate effort*)
- Promote the free services of UGA Small Business Development Center to assist business owners and those wanting to enter, sustain, and/or expand their fishing/aquaculture-related businesses. (*no cost, low effort*)
- Continue supporting the McIntosh County Academy Commercial Fishing Pathway Program with ongoing outreach/technical assistance to sustain and build the program (*low cost, low to moderate effort*)
- Continue offering existing training programs such as seafood HACCP, oyster aquaculture startup (*beginning in 2022*) and commercial vessel drill conductor safety annually.

### **MID-TERM STRATEGIES**

#### North Carolina

- Coordinate with marketing experts, not just to develop industry-relevant marketing training for businesses operations, but also for recruitment marketing (talent acquisition) out of area and to underserved/underrepresented communities. (*moderate to high cost, moderate to high effort*)
- Create apprenticeship programs, led by the NC Community College System, in partnership with trusted industry professionals and funded by grants, so that both mentor and apprentice are compensated and covered. (*moderate to high cost, high effort*)

## South Carolina

- Facilitate enhanced industry cooperation through the formation of co-ops, pooled buying agreements, and/or other forms of organizing (*low to moderate cost, moderate effort*)
- Facilitate capacity building and training opportunities for Gullah Geechee Seafood Trail members (*moderate cost, moderate effort*)
- Organize training, offer technical assistance and/or develop and share resources that promote opportunities for relevant business diversification (e.g., value added product development) (*low to moderate cost, moderate effort*)
- Collaborate with schools or other youth development organizations to develop outreach programs that introduce youth (e.g., junior high, high school) to fishing, aquaculture and/or other seafood careers. (*low to moderate cost, moderate effort*)
- Continue to build public and private partnerships, including with technical colleges, to advance plans for a fisheries and aquaculture training program in McClellanville (*low cost, moderate to high effort*)
- Develop and go live with an SC Mariculture Lease Siting Tool to aid mariculture industry entrants in selecting an optimal lease site - a recently started project (*moderate cost, moderate to high effort*)

## Georgia

- Collaborate with UGA Small Business Development Center and/or other relevant business-related entities (i.e., SBA, SCORE etc.) to develop business/financial management training specifically geared for fishing/aquaculture industry participants. (*low to moderate cost, moderate to high effort*)
- Coordinate with marketing experts to develop industry-relevant marketing training for fishing/aquaculture businesses; (*low to moderate cost, moderate to high effort*)
- Seek and build partnerships (*ex: technical college system, Georgia Association of Marine Businesses, Sapelo Island National Estuarine Research Reserve's Coastal Training Program, and/or individual industry members*) to develop and implement technical training geared towards industry needs: examples can



Youth programs with a fishing career focus were mentioned by several meeting participants. Image credit: Marine Extension and Georgia Sea Grant

include, but not be limited to diesel engine repair, electrician/ wood working, welding, net mending\* (*moderate to high costs, moderate to high effort*)

- Organize training, offer technical assistance and/or develop and share resources that promote opportunities for relevant business diversification including, but limited to eco/agri/heritage tourism, value added product development and distribution, direct marketing strategies, cooperatives etc.
- Collaborate with 4-H or other youth development organizations to develop outreach programs that introduces youth to commercial fishing, aquaculture and/or related career choices. (*low to moderate cost, low to moderate effort*)
- Develop an advisory group (*within and outside of industry*) to identify funding opportunities, build capacity and provide input on how to enhance/expand relevant workforce development initiatives

## LONG-TERM STRATEGIES

### North Carolina

- Develop a training facility (inclusive of housing/dormitories) where professionals in their respective fields are hired to train in different topics related to fishing and aquaculture. This might best be achieved by implementing on a South Atlantic regional level. (*high cost, high effort*)
- Develop high school aquaculture programs where schools have access to lease sites to grow and market shellfish (with sales rolling back into the program and thus self-sustaining after startup). (*high cost, high effort*)

### South Carolina

- Collaborate with industry partners and fishing community members to develop an apprenticeship program, with a full-time coordinator, compensated captain mentors, and quality candidates. This would require consistent external funding. (*high cost, high effort*)
- Partner with communities beyond McClellanville, other South Atlantic Sea Grant programs, and industry partners to develop a regional fisheries and aquaculture workforce training program and/or center (*high cost, high effort*)
- Expand geographic reach of usual recruitment areas (*low cost, high effort*)
- Build public and private partnerships to preserve working waterfront spaces (*high cost, high effort*)

### Georgia

- Partner with other Sea Grant, community and industry partners to investigate the feasibility of a regional training facility (or program) specifically focused on fishing and/or aquaculture industry workforce development in the south Atlantic region. (*high cost, high effort*)



- Collaborate with industry partners to create an apprenticeship program led by trusted industry professionals funded by grants so that both mentor and apprentice are compensated and covered; may be more appropriate for the aquaculture industry due to liability issues. (moderate to high cost, high effort)
- Consider repurposing the R/V Georgia Bulldog to a commercial vessel where programs are taught how to run/maintain vessels, catch and market shrimp.
- Develop high school aquaculture programs where schools have access to lease sites to grow and market their own shellfish

Common Workforce Development Themes

While the above-mentioned strategies mainly focus on local-and state-level workforce development initiatives, several common workforce development themes (Table 3) emerged from focus groups in all three states. Specific program needs and/or delivery may differ based on the state and/or sector(s), but these commonalities provide an opportunity for Sea Grant and its partners to leverage resources on a regional and, potentially, a national level to develop new or adapt existing programs/resources that will be broadly beneficial across the region.

Table 3: Common Workforce Development Themes in the Region

|                     |                                     |                               |
|---------------------|-------------------------------------|-------------------------------|
| Safety              | School Programs/<br>Career Pathways | Marketing                     |
| Financial Literacy  | Fisheries Biology/<br>Management    | Apprenticeships               |
| Business Management | Technical Skills <sup>2</sup>       | Interpersonal/<br>Soft Skills |

---

<sup>2</sup> These skills can include, but not be limited to fishing/harvesting-specific skills such as net mending, cage building, etc., navigation skills, and/or support skills such as marine diesel mechanics, welding, fiber glassing, etc.

As referenced in Table 1, there already are programs being offered in the south Atlantic that address some of these topics, but there are opportunities for Sea Grant to help expand when and where they are offered. For example, Marine Extension and Georgia Sea Grant coordinates with the Alaska Marine Safety Education Association (AMSEA) to offer a 12-hour drill conductor safety training annually at its Brunswick facility. However, AMSEA has indicated the need for more trainers in the South Atlantic region. Sea Grant can work with AMSEA to help identify and recruit future trainers from each of the three states to expand the number of training opportunities offered in the region. In another example, North Carolina Sea Grant's Fish Camp, which was adapted from



*Fishermen practice at-sea survival skills during a training:  
Image credit: Marine Extension and Georgia Sea Grant*

parts of Alaska's Young Fishermen's Summit, addresses interpersonal skills such as communication. Opportunities exist to expand this type of training to South Carolina and Georgia through a potential train-the-trainer approach and identification of funding to sustain this program on a larger scale. Furthermore, South Carolina Sea Grant recently developed an online [Aquaculture Toolkit](#) to support existing shellfish growers and individuals wanting to start a shellfish aquaculture business in their state.

Some of the information presented in the toolkit is state-specific, but it could be expanded to contain information relevant to the surrounding states' shellfish aquaculture businesses as well.

Table 4 also highlights examples of workforce development programs identified from Objective 1 that address one or several of these shared themes. These programs can provide additional context for Sea Grant and its partners as new programs are developed and/or existing ones are modified. For a full listing of programs and the topics they address click [here](#).

Table 4: :Examples of Other Workforce Programs Addressing Common Themes

| <b>Program/Resource</b>                              | <b>Workforce Topics</b>  | <b>State/Region</b> |
|--|--|---------------------|
| California Commercial Fishing Apprenticeship Program | Safety, business management, marketing, technical skills, Apprenticeship, Hands-on learning classroom                                | California          |
| Young Fishing Fellows Program                        | Business management, technical skills, fisheries biology/management, Apprenticeship/ on the job training                             | Alaska              |
| Commercial Fishing Apprenticeship Program            | Safety, financial literacy, business management, technical skills, apprenticeship, on the job training, hands-on learning, classroom | Rhode Island        |
| Off Bottom Oyster Farming Fundamentals Course        | Safety, business management, fisheries biology/management technical skills, classroom  | Mississippi         |

### Regional Recommendations

Finally, regardless of the scale and scope of workforce training programs, there are several actions that the South Atlantic Sea Grant programs can implement collectively to help ensure their efforts are successful in the short, medium, and long-term future.

- Seek out funding opportunities (*ex: grants, donations, corporate sponsorships, scholarships, in-kind services, etc.*) that can help support and sustain training programs and associated costs.
- Explore the option of a regional training center to help leverage resources and expertise.
- Coordinate with the U.S. Small Business Administration, Small Business Development Centers, family consumer science extension programs, SCORE, and similar organizations to help develop and/or support financial literacy-related programming that specifically focuses on the region’s various fishing and aquaculture sectors.
- Promote learning exchanges between local industry members/organizations and representatives in other parts of the country where successful

training/apprenticeship programs are already established (example: Rhode Island, Alaska, Maine).

- Collaborate with technical college programs and/or trade associations to ensure adequate technical skill programs (*ex: welding, fiberglassing, marine diesel mechanics, etc.*) are being offered across the region.
- Increase communication/marketing efforts to make industries aware of training opportunities/education resources to help them with their operations.
- Work with industry and educational partners to develop recruitment strategies to bring in potential workforce candidates from outside the immediate coastal areas. For example, online job board sites could be created
- Maintain regular communication regarding workforce development opportunities, barriers, successes, and/or lessons learned.
- Continue seeking out partners/opportunities to improve insurance options for the region's fishing and aquaculture industries to help facilitate workforce entry and retention.
- Where there is industry interest, support the development of fishing and/or watermen associations, and other forms of organizations.



*Participants in North Carolina Sea Grant's Fish Camp Program collaborate on a training exercise:  
Image credit: North Carolina Sea Grant*

## APPENDIXES



## APPENDIX I

### **North Carolina Focus Groups Summary**

The goal of this project was to develop a planning framework for the creation and implementation of workforce development programming for those making a living off the water in the South Atlantic region (NC, SC, and GA) and to better prepare for responding to potential funding opportunities from the Young Fishermen's Development Act that can help financially support such initiatives. We endeavored to identify what is needed at state and regional levels to initiate programs, workshops, and services to enable young persons to enter career paths making a living supplying seafood, whether that be via wild-harvest, farm-raised, or recreational guide services (i.e., charter/head boat).

As a regional team, we accomplished this overarching goal through the following objectives:

1. Review and assess existing industry-related career development resources (i.e., trainings, outreach programs, research, etc.) that can be utilized for future workforce development initiatives in the region;
2. Organize focus groups with fishing (commercial and for-hire) and aquaculture industry representatives from NC, SC, and GA to solicit input on what is needed to build effective workforce development initiatives relevant to the region's fishing and aquaculture industries; and
3. Using information compiled from Objectives 1 and 2, conduct a gap analysis, as well as identify specific short-, medium-, and long-term strategies that will help support and sustain industry-desired workforce development needs per state and across the region.

Scope of Work.-

As it relates to the North Carolina Sea Grant College Program (NCSG) at NC State University and the above-stated objectives, Sara Mirabilio, northeast area extension fisheries specialist, and Scott Baker, southeast area extension fisheries specialist, worked with Eric Herbst, statewide (but working out of North Carolina Sea Grant's central coast office) coastal aquaculture specialist, to identify and classify stakeholders for attending focus group meetings held in each of North Carolina's three coastal

regions. To allow for maximum participation during COVID times, these meetings were “hybrid,” featuring both in-person and remote (via Zoom) attendance options.

More specifically, each staff member identified eight stakeholders, two each from four major stakeholder groups (commercial fishers, for-hire fishers, aquaculturists, and high school vocational education/DEI group representatives) to attend an area-specific focus group meeting for a total of 24 persons. Through social network analysis, these sector leaders were identified as being qualified to serve as local knowledge experts to aid in development of "next-gen" programming for those making a living providing seafood to the public. Participants were a mix of both younger (under 35 years old) and older individuals, so that emerging/novel, as well as “tried-and-true” educational needs were represented in the conversation.

Two (north and south) of the three North Carolina focus groups occurred the evening (6-8 p.m.) of Tuesday, Nov. 16, 2021. The third focus group held on the central coast occurred the evening of Thursday, Nov. 18, 2021. All meetings were located at respective NCSG coastal offices (ECU Coastal Studies Institute, UNCW Center for Marine Science, and NCSU Center for Marine Sciences and Technology). Staff members used a semi-structured interview technique, “seeding” the conversation with a few predetermined questions (Appendix A), and then letting the rest of the conversation flow organically. The overarching themes for the conversations were:

1. Getting to know each other;
2. Understanding the workforce; and
3. Developing solutions to workforce problems.

Through the Otter.ai software, staff were able to complete speech to text transcription and translation applications using artificial intelligence and machine learning. The software also generated a summary of key words from the dialog.

#### Findings.-

There were many similarities in themes across all three regions. Recurring words expressed relating to workforce were: People, Skills, and Jobs.

Relating to potential solutions,  
keywords included:  
Apprenticeships and Aquaculture.

A chief impediment to cultivating  
the next generation of men and  
women making a living off the  
water continues to be  
Regulations.

Staff used a complete list of  
Otter.ai keyword results to  
generate a pictorial word cloud  
image (Fig. 1).

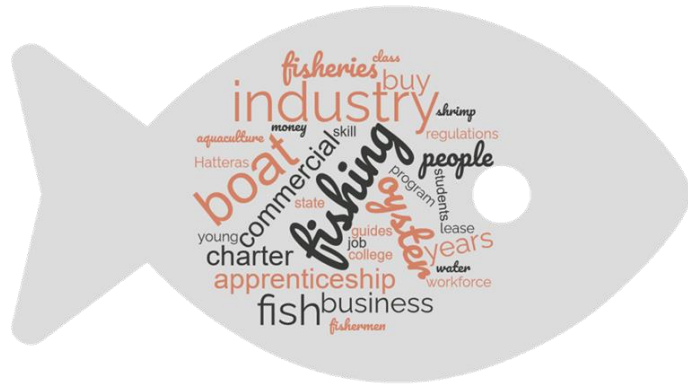


Figure 1. Pictorial representation of summary key words identified from Otter.ai software from text transcriptions of three coastal (Wanchese, Morehead City, Wilmington) North Carolina focus groups held November 2021.

Participants in all three meetings  
focused the initial conversation on a lack of reliable, competent, and consistent help as a threat to business viability across all stakeholder categories. One commercial fisher from the Central Coast meeting remarked, though similar was heard in all three focus groups:

*“I’ve seen a major change in the workforce in my lifetime in commercial fishing industry. When I was younger, the quality of individual and commercial boats was much higher than it is today. On the larger boats, I see a constant problem: substance abuse. It’s hard to keep decent people on your boats.”*

Across all three focus groups there was much discussion about needed jobs largely being manual labor which requires “mental toughness.” The youngest participant of all 24 participants remarked,

*“No, you got to get it out there. I mean, I guess I could go with everybody the same way that I feel like the mental attitude now, and I guess I’m the youngest one here, so this is like my generation, I can kind of see where there’s more entitlement, there’s less desire to want to prove yourself to get there as opposed to already feel like you should already have it.”*

Several participants referenced having to modify their business practices in recent years due to not having reliable crews or workers on a consistent basis. Still others, moved out of commercial and for-hire operations into a more emerging field – shellfish aquaculture. From one shellfish grower:

*“So, we had changed from shrimp boats, fish boats, basically what we’re doing now is shellfish.”*

When asked what key factors have driven this change, unsurprisingly talk of regulations came up. From one commercial fisher:

*“When I was coming up in fishing industry, weather and competition from other fishermen was your biggest concern. And then just a few years after I really started getting into it, that regulation became the fear of ‘Is it going close tomorrow? Is it going to close next year?’ And who can come into an industry with that kind of fear?”*

An aquaculturist example statement:

*“I applied for two more leases, and I got turned down for both of them. And you know, based on their assigning tool and everything else, I put them in places where they said it was okay to have them, where there wasn't submerged aquatic vegetation. So here I have a business that's thriving. I'm trying to expand it, so I'm trying to create more jobs. I'm trying to expand the aquaculture industry. I'm trying to do all of the above, and I get turned down. And so how many businesses do you know where when they're ready to expand, they're not able to do it, because they're not able to get the permits to use the water to expand? So are you going to encourage a young person to get into this business?”*

Many parents are encouraging children to go to college versus fishing or, even more broadly, trade jobs. A dean for one of the community colleges remarked,

*“And parents, the parents are saying, ‘You're going to college, son. You're going to NC State.’”*

But there were some novel issues discussed, such as affordable housing, particularly along the Northern Outer Banks (Kitty Hawk, Kill Devil Hills, Nags Head, Hatteras Is.). The lack of affordable housing for sale or rent in Dare County has a profound effect on many people — they include seasonal and year-round workers, and therefore, the businesses and organizations that rely on them. Bestplaces.net reports that on a scale of living with 100 being the median, the cost of living in Dare County is 112 compared to 90.6 for the remainder of the state. The website reports that the median home cost in the county is \$341,400 compared to \$187,300 for the state and \$231,200 nationally. From a shellfish aquaculture operator:

*“I do think for a lot of young people, the sort of manual labor aspect of some of the fishing and aquaculture, they don't see a future in it, or they don't, they're not attracted to it. But I also think there's an underlying problem with help, and that is housing. And I know that I mean, it's, it's, it's true everywhere. I mean, it's very true in Hatteras, but it's very true in Nags Head, and all around the area, that if you had some kinds of dorms or places where you could offer an apprenticeship where you knew that you could offer housing, as well, I think you would find seats for those*

*chairs. But without that, it's very difficult because you say, 'Oh, here, ... I've got a \$15 an hour job. Do you want it?' And in reply, 'Well, where am I going to live?' You know? So, I think that's, that is, is really very intertwined with our housing problem."*

Inlet issues, specifically shoaling, was another issue spoke of by participants in the Northern focus group more so than elsewhere. Attendees expressed how constrained drafts lead to canceled charter trips and the feeling by the younger generation that there is no security in making an investment in an offshore boat. It also means there are times, with regularity, that the commercial fleet cannot either leave or return to the docks. From a young charter boat captain:

*"I mean, there's no way right now you could convince a younger guy here to buy a boat that has draft issues, because, I mean, there's multiple trips canceled by boats all year long. We can't get it in the inlet. You think it's bad in Oregon Inlet, come to Hatteras. It's worse, you know? And there's guys canceling trips all the time. And the dredging has been a huge issue. And there's no real stability or security in making that investment. And you're seeing a lot of the younger guys here buy inshore boats. Well one, access to the ocean, and two, it's cheaper. And you're seeing the inshore fleet grow, mostly of young local guys. And the offshore boats are really struggling to find help."*

With ample inshore fishing grounds in the southern region, there has been a rapid expansion of inshore and light tackle fishing guide services. An issue especially talked about by participants in the Southern focus group was how while operators are licensed guides, many are new to the region and do not know the waters with minimal First Aid training and boater safety skills. From one seasoned for-hire operator:

*"..., but more importantly man, I mean, really, honestly, it's kind of hokey, but safety is more important. I mean, at the end of the day, man, you got three people from DC that don't know anything about the ocean, and you got to bring them back in one piece and catch 'em fish in four hours and put it all in a nice little basket. So, those are two things that I think are pretty important. Sometimes it doesn't matter, the success of a trip doesn't matter, if you caught 500 pounds of fish like a commercial endeavor. It's more or less bringing 'em out, show 'em a good time, and bringing 'em back in one piece."*

In all three regions, while traditional knowledge and skills associated with fishing/aquaculture (e.g., boat handling, navigation, gear repair, etc.) were acknowledged as still being important, the notion of just being a "good fisherman" was not enough to remain successful in the industry anymore. Demonstrating sound business practices and being financially literate, along with possessing a mix of relevant technical skills, was recognized as being needed to prosper in the industry these days. Furthermore, strong interpersonal skills (*which participants mentioned are often*



*lacking in the current workforce*) including dependability, problem-solving, adaptability, and self-motivation were acknowledged as increasingly important. From a shellfish aquaculture operator:

*“I don't think it's like, it's not, it's not like you're offering a job, a secure job. What you're offering is something that, that requires a great deal of entrepreneurship. And, in time, it requires a lot of maturity. And so, I mean, those are, are things down the road, but, but I mean, maybe the fundamental question is, ‘How many young people want to be entrepreneurs? How many young people want to take that element of risk on themselves in their career, as opposed to going the safe route?’ ... And so, if we are, say, as a society becoming more risk averse, that may be one of the reasons why we're not finding a lot of people trying to come this direction.”*

The conversation then shifted to discussing solutions to workforce problems and included identifying what up-and-coming members of each industry need to succeed.

#### Recommendations.-

There was general agreement about the benefits of workforce training with specific mention of NCSG's 2018 and 2020 “Fish Camp” trainings, as well as the Shellfish Farming Academy, conducted in partnership with Carteret Community College, with sessions in summer and fall 2020 and spring and summer 2021, and how efforts like this will help sustain the industry long-term. On Jan. 7-9, 2020, NCSG hosted a networking and skill-building training for a rising generation of men and women involved in commercial fishing. The effort built upon a 2018 series of workshops — coined Fish Camps — that were part of the Next-Generation Coastal Communities project led by Dr. David Griffith and funded by NCSG. That project endeavored to reverse the tide on an aging and contracting North Carolina commercial seafood industry by helping the next generation become more successful in their careers and communities. Relating to shellfish culture, because of industry development and expansion North Carolina had a need for a comprehensive shellfish mariculture training program that would combine classroom studies with hands-on field training to support the needs of prospective growers. Thus, through grant money, the Shellfish Farming Academy was developed. Both of these trainings currently are without funding for future efforts.

But there also was strong sentiment that *training alone will not be sufficient*. All three focus groups noted the subtle difference between knowledge and skills. Knowledge, to them, was understanding the “lay of the land” and being able to catch fish. There comes a respect for the ocean and knowing what to do under certain conditions. Therefore, a

major recommendation was to cultivate an apprenticeship program to complement any instructional/classroom-style teaching. From one shellfish grower:

*“I do think that every job, any job, and I tell this to young people all the time, you learn on the job. You learn by doing. You can major in finance, and you can get a job in finance, and you might be able to, you know, say that you know Excel and you know this, and you know that, but you're really not going to know that job that they're hiring you for until you do it. So what I love about the idea of apprenticeships is, they're going to be able to learn by doing. And so, I think that's more valuable than anything. And really, how are you going to find out if you have a passion for oyster farming, for commercial fishing, or charter boat fishing unless you do it? So, you know, to me apprenticeships, if there's a way that you can make that work, is the best way to get people to learn and to understand and to maybe even be able to ascertain whether it's what they want to do, or if they have a passion for it.”*

The various coastal-based community colleges have some apprenticeship programs. The North Carolina Community College System is a statewide network of 58 public community colleges. Each specializes in offering technical courses geared towards industry needs. Examples include diesel engine repair, electrical, and welding. Even further, they partner with local high schools to offer training for trade jobs. A junior or senior in high school can take, for example, a 96-hour welding curriculum for free while in high school and then graduate and do an apprenticeship. The College of the Albemarle has a welding certification track that includes an apprenticeship program where students regularly work with the Iron Workers Union in Norfolk, Va., to gain real-world experience. There is a boat-building apprenticeship, but nothing currently exists related to fishing, commercial or for-hire, nor for aquaculture.

In addition to the affordable housing issue noted earlier, outreach to new audiences (out-of-area potential workers) has been challenging. From our youngest participant again (who now is running a landscaping business after graduating from NC State with a communications degree and was attending to represent the Latino Community):

*“I feel like, especially in the landscaping business, we have a lot of trouble finding workers, as well. But I feel like we always look within the same people or ask our own circles. And there's not as much outreach to other people that aren't in our own in circles to look for work... one time, we did, like, one ad on Facebook. And we, you can target ads, you can target audiences, ages, and, you know, male or female and everything, and we got a lot of luck with, like, getting people, because we just put it out there, and you pay a certain amount of money, and like, a bunch of people see it from all over, and you can pick what region the ad goes to... sometimes they just don't know about it, or haven't heard about it, so maybe that is one of the problems is just not knowing exactly where the need is, or it's, it's not marketed out. 'Cause, 'cause there is*

*a lot of hard labor that, especially in commercial fishing, that can maybe deter somebody away, but maybe if it was just explained a little bit better that it's not all that, that it comes with other skills that you can take, like, just kind of packaged differently, as opposed to just being just a concept of something like grunt work, hard labor that is not as appealing to everybody, but it, it includes like other things, the other kind of work, it's not all just mate work that's needed. There's other parts of the business that maybe need help that I feel like a lot of people don't know that's there, there's a need for, because it, because, because just like in most industries, you just kind of stay within your own circles to try to try the help.”*

Across all three focus groups soft skills, particularly customer service, were mentioned. The next generation needs communication skills, whether it be to convey the importance of their seafood sector to management bodies, or to seafood consumers and customers the value of a product/service. From a younger charter boat operator:

*“I would say for skill-wise, it's probably communication. Just the ability to communicate, whether it's your boss, your coworker.”*

Workforce Development Strategies.-

The following strategies are suggested to support the seafood (for-hire, commercial, and aquaculture) workforce development in North Carolina based on participant feedback along with identified existing in-state (and beyond) assets that can contribute technical expertise, funding, and/or other resources to support relevant workforce training opportunities for the industries.

Short-term (*within in a year*)

- Identify, share and/or develop relevant fishing/aquaculture business fact sheets/resources to assist individuals wanting to enter and/or expand their businesses. Examples could include, but not be limited to, business set up, finance/loan support programs, creating business plans, succession planning, and similar. (*low cost, moderate effort*)
- Develop advisory group (*within and outside of industries*) to identify funding opportunities and to provide input on how to enhance/expand workforce development opportunities. (*low cost, low effort*)
- Secure external funding for NCSG to host 2023 Fish Camp and NC Shellfish Academy trainings. (*moderate cost, moderate effort*)

### Mid-term (1-2 years)

- Coordinate with marketing experts, not just to develop industry-relevant marketing training for businesses operations, but also for recruitment marketing (talent acquisition) out of area and to underserved/underrepresented communities. (*moderate to high cost, moderate to high effort*)
- Creation of apprenticeship programs, led by the NC Community College System, in partnership with trusted industry professionals and funded by grants, so that both mentor and apprentice are compensated and covered. (*moderate to high cost, high effort*)

### Long-term (3-5 years)

- Development of a training facility (inclusive of housing/dormitories) where professionals in their respective fields are hired to train in different topics related to fishing and aquaculture. This might best be achieved by implementing on a South Atlantic regional level. (*high cost, high effort*)
- Develop high school aquaculture programs where schools have access to lease sites to grow and market shellfish (with sales rolling back into the program and thus self-sustaining after startup). (*high cost, high effort*)

## APPENDIX II

### South Carolina Focus Groups Summary

#### McClellanville, SC Focus Group Summary

The McClellanville focus group was held October 22<sup>nd</sup> in the McClellanville Town Hall. Attendees included four commercial shrimpers and two commercial mariculturists (clams, oysters, soft-shell blue crab). Attendees were all white males, mostly in the 50-70 year range. Graham Gaines from SC Sea Grant facilitated the discussion, along with Matt Gorstein and Sarah Pedigo also from SC Sea Grant, and Steve Richards, agri-business extension specialist from Clemson University.

Many of the talking points from the McClellanville discussion were related to concerns of the future of Carolina Seafoods (the primary seafood dealer in McClellanville) and the sustainability of the few remaining fishing waterfronts in the village. SC Sea Grant has been working with the village on legacy planning initiatives for five years, so many of these talking points were emphasizing concerns previously expressed by the watermen to Sea Grant. McClellanville is one of the most fisheries-dependent communities in the Southeastern US, yet a surging “graying of the fleet (and business owners)” in the village has put the future of the village in jeopardy.

The group explored how workforce development opportunities might inject a new supply of seafood workers and keep the town a “commercial fishing town”; however, an often-stressed point was that the securing of existing assets (waterfronts, businesses, and vessels) must take priority over workforce development.

*“If there’s no Carolina seafood. Well, what are you training them for?”*

*“If there's no place for a fleet to be, yeah, then there's nothing to attract anybody. So you have to have a place for the boat... you have to have boats.”*

Regarding *how* to keep the assets and boats, a recurring point demonstrating infrastructure investment needs was the lack of insurance options. Much of shrimping, especially in McClellanville, is with wooden boats, or fiberglass over wood, both of which are unattractive to insurance providers and come with premiums unaffordable to shrimpers (approximately \$60,000-80,000 per year). In order to train a new workforce, or to pass on vessels to a new generation of fishermen, insurance options – which are a precursor to financing for entry into the sector – must be improved. Equally important to shrimpers is liability and worker’s compensation coverage. Without either, most fishermen will not take on trainees or apprentices due to the increased liability:



*“So if someone gets hurt... and I’m talking from personal experience, it hurts. Cause maritime law... they got you. It doesn’t matter how stupid they do something, it’s your fault. Boom. That’s one big deterrent for people coming into this thing.”*

*“I’ve learned that that’s the number one issue that if there’s going to be any progression into getting younger people involved, that insurance issues must be figured out.”*

*“As far as training people to get into the commercial fishing side of commercial fishing... that would never work. Because the very first thing we talked about was insurance. Or liability. That is not... that will never work. I won’t bring new people on my boat every week or every month. Because when I get a new guy, I’m hyper vigilant. We’re watching him. When we get him trained, then we can dial it down, because he’s doing what we asked him to do. To have a constant greenhorn, with the extra liability. Pending liability. I can’t do that.”*

Despite these and other obstacles, the group discussed the needs and outlook for training future seafood entrepreneurs. They discussed the qualities needed in a seafood worker, where the pool of new workers might come from, and what a training or apprenticeship program might look like. To make a living, working through the year as opposed to seasonality is better for making a living, making mariculture operations likely more attractive. Employers need to look beyond skills and knowledge, and focus on finding “go-getters” with strong work ethics. Future workers do not need to live in the immediate area, but it helps to be within a couple hours radius of a drive to the docks. Some of the more successful workers in the past have been female, according to one shrimper. Also, there is utility in searching for immigrant labor, and attendees said they’ve had good success with Hispanic workers in the past; finding potential minority workers and aligning them with fair, entrepreneurial opportunities may have merit in filling some of the workforce gaps.

*“We do have a good population of underrepresented communities that we could focus on to try and get that training program in local schools, or... to get our local people here that aren’t really going to college or don’t have a whole lot of other options and, you know, a lot of other advantages that... you know you could make a good living here. You could end up with your own boat.”*

Another key to attracting qualified people to the workforce is incentives and assisted financing. One of the clammers explains his system here:

*“If I could find somebody dependable that was interested, I could break them into the business. And they could start buying their way into it as they were. Yeah. It would take it would take several years for them to do that to get something built up. But that, that’s what I’m looking for now. The [New hire] is given certain seed. So they’re*

*actually putting seed out every year now starting to harvest some and see that it does work. If they can see that, there's a future in it for them. It's hard because the economics of the dock, we get what we get, we can't pay top dollar all the time. So we pay a little bit along the way... So they're getting money along the whole way or getting invested in, you know, in an opportunity to buy a boat or in the co-op”.*

The clammers explained that providing a product that trainees can buy-into has historically created good workers and have led to more product and better bottom-lines for all involved. Similar incentives can exist for deckhands (shares), yet productivity in wild-capture fisheries is limited to what you catch, whereas in mariculture it is limited primarily by seed availability and finances, making mariculture more “apprenticeship friendly” under current financial and regulatory contexts.

Other points made during the McClellanville meeting included: additional freezing capacity would allow workers to work across seasons, the incompatibility of modern technology and existing shrimp boats, the lack of local expertise for net mending and welding, and the need for skills to be taught in seafood processing and fish house management.

#### Beaufort, SC Focus Group Summary

The second focus group in South Carolina was held in Beaufort on January 12<sup>th</sup> at Clemson Extension office. Attendees included: three commercial shrimpers, two commercial crabbers, one wholesale crab dealer, one bait fisherman/shop owner, one multi-species commercial fisherman, and one oyster farmer. Of the nine participants, one was female, five were Black, four were white, and ages ranged from late 40s to early 70s. Graham Gaines from SC Sea Grant facilitated the discussion, along with Matt Gorstein from SC Sea Grant, and Steve Richards, agri-business extension specialist from Clemson University.

Beaufort County has a long history of commercial fishing. Additionally, Black fishermen, many of whom represent Gullah Geechee communities, have deeply rooted cultural ties to fishing. History, heritage, and culture was therefore a common theme in these discussions. Because some of the participants had differing roles in terms of dealer/buyer versus harvester/seller, opinions varied on approaches towards how fishermen can or should organize themselves to have stronger voices, representation, or buying power. The meeting was positive and resulted in stronger relationships across sectors and groups. Politics and regulations, primarily as obstacles to entry into the industry, were common threads of discussion for most all attendees. While opinions on training a new workforce – or offering commercial fisheries apprenticeship opportunities – were discussed with diversifying opinions, overall there were many comments related to workforce needs and potential applicant characteristics that were offered. Generally, concerning an apprenticeship program, it seemed there was more

interest from those with mariculture operations than the traditional wild capture fisheries.

The problem of a declining workforce was clearly recognized by the group:

*“The folks are tied at the dock because they can’t find the work. So you’ve got people who want to do the work, you have to work for more work. So you’ve got all these boats with no crews. You may have a captain, but who can work with that?”*

*“There’s fewer and fewer people entering the seafood industry, from fishermen’s perspective and other people this progressively is happening over the last 20 years in my experience, looking back on it. The fishermen are bypassing the wholesale dealers, causing dealer volumes to be less and increasing our overhead, diminishing our profits. So we’re just a byproduct of the shrinking industry overall. And under it, it’s undermining the ability to maintain a full-time workforce. So potential new entrants in the industry are few to have boating experience a lot less children exposed to the river life because of the shrinking seafood industry, they’re not bring their children into it, they’re sending them away from it.”*

Concerning some of the key obstacles to workforce development, high barriers of entry were often discussed. It was discussed how in previous years one could work for a crabber, save the money earned, then eventually buy his/her own boat and work for his/herself. But financial circumstances have changed in recent years, to the point that “they either have to accept the fact I’m working on the back of this guy’s boat for the rest of my life or I need to get out of this industry.” One opinion related to this was that government agencies had spent decades restricting commercial fishing productivity through regulatory actions; this fisherman believes that federal agencies asking current struggling fishermen to train new fishermen is contradictory:

*“If you want to be a grouper and snapper fishermen right now, and you want to trap like sea bass one month out of the year, you need \$110,000 just to buy your permit. Then you have to go buy a junkie here for another \$100,000. So you’re starting out at \$200,000 in the hole and then you go fishing. So once you get to go fishing, now you get all these regulations like when you have a trip limit you can catch 500 black sea bass per trip. Then it’s just like a kick in the pants from the government and say ‘hey, we’re going to give you some money to train some young fishermen to get into fishing.’ Well the young fishermen got out because you regulated them so hard that they can’t make a living.”*

*“My dad gave me his boat, but it lasted my dad his career. When he gave it me, it was really old. So like you said, I’ve got to come up 100 and some thousand to get a good boat to last me the rest of my career.”*

*“The money aspect of it is good, but you have to put time in to make the money. If you ain’t got no money, you can’t be a shrimper or a crabber.”*

Despite the barriers to entry and regulatory issues, many ideas were offered on how to go about implementing training programs, and specifically who makes an ideal candidate for entering this industry. One veteran shrimper had an opinion that we need to (1) work primarily to build up the small vessel capacity, and (2) work with existing watermen to enter the shrimping industry:

*“I think what's going to bring the industry back is the members of the men that are already in the water, maybe crabbers, they're going to be our next shrimpers. Most of them are in the water. It's going to build up just like it did when it first started. It's going to build up the small boats. And those boats are going to build up. It very well may never reach the amount of boats and all that it did. I just don't know. But um, I think every effort needs to be made to help these small boats.”*

*“I know several crabbers that never did shrimp until a few years ago. Now, it's getting more and more profitable for them without many boats around. So I think that these crabbers are a good source of manpower. You know, some of them, they got boats, they got motors, they already understand the water and all. And they shrimp, and some of them see a future and they'll get a bigger boat. And I'll tell you what, some of these little kicker rigs is doing good.”*

Concerning how to target the younger generation to work in the seafood sector. The amount of information that is available to kids is more than previous generations had to deal with. So recruiting a new workforce will require ramping up efforts of exposure. It will also require thinking about alternative skills or positions that can boost seafood businesses and utilize skillsets more common among younger generations.

*“Those kids are out there, they haven’t vanished off the face of the earth. They just don’t understand what opportunities, what they don’t know... I’ve met kids who do want to do this work, but it’s harder to find those kids because they’re few and far between. A lot of them have learned how to thrive in the information age and get on social media and doing things on the computer and finding jobs that way... But the people that our industry needs to appeal to, and farming and industrial jobs, any job that’s working*

*with your hands or away from the computer, is you need to appeal to the kids who that doesn't necessarily appeal to."*

*I think that the other aspect of where you could tie in some younger folks too is, you know, there's the aspect of trying to find the people who want to replace us, like the people who are going to drive the boat, work the deck, all that hard stuff, and delivery trucks and processing. But then there is the aspect of the younger folks who know how to do all the stuff that could benefit us that we don't even know. Maybe some of you guys know but I don't have two clues about like some of the social media stuff, and some of the marketing, and some of the website stuff, and all that sort of thing."*

Participants noted that safety training is very important. Two of the participants were soon to begin a safety instructor course, and discussed the importance of having potential workers be intimately familiar with the dangers of working on the ocean. Most of the participants agreed that if they were to take on any apprentices, they would require them to know basic safety measures, understand rules, have their own gear and supplies. Finally, it was pointed out that expectations for hiring are typically strict, which could be cause of concern if the owner cannot require as much from an apprentice as he/she would from a traditional laborer, if the apprentice was "assigned" to the farm. It is therefore important to ask whether part-time employees are more appropriate than apprentices (from the perspective of the fisher/farmer), due to apprentices requiring more "adoption" and being trained under someone's wing. This warrants more investigation of compensation, time commitments and time availability from all parties participating in an apprenticeship program.

Other ideas included tapping into the Future Farmers of America for potential apprentices, and working with existing captain's attitudes and training abilities to make apprenticeships more appealing

#### Georgetown, SC Focus Group Summary

The final South Carolina focus group was held in Georgetown, South Carolina on January 25<sup>th</sup> at the University of South Carolina's Baruch Institute. Participants included two Black male representatives from the Sampit River Bassmasters, one white female seafood market worker, and two female non-profit community leaders (one white, one Black). Matt Gorstein with SC Sea Grant facilitated the meeting. Also present from SC Sea Grant were Sarah Pedigo and Emmi Palenbaum.

The group was largely composed of participants with a strong background in education and community activism. Discussions were therefore centered largely around the topics of history, heritage, tradition, changes in work ethics, regulatory challenges, and education.



Concerning obstacles to workforce development, individualism as a common characteristic of commercial fishermen was pointed to as a reason for why the sector doesn't commonly ask for help. Increased traffic from recreational use of the waterways is disruptive to fishing and has discouraged some folks from going out there to harvest food, as has a lack of access to traditionally fished spaces due to development of waterfront areas. Regulations were also seen as an important barrier to entry, especially regulations related to snapper/grouper that make that fishery difficult to earn a living from. Regulations are disproportionately disruptive towards commercial fishing compared to recreational fishing, which makes entering commercial fishing unappealing, according to one participant.

*“I think a lot of the guys, and these are my personal personal feelings here. I think a lot of guys that have been in it a long time they struggle with having people help. And are very fiercely independent people. And, you know, they probably burn through crew, like crazy. And I don't think, that's the lack of interests, it's a job somebody's going to take when they can't do anything else. And that's just my personal observations.”*

Most of the solutions towards improved workforce development were focused on education – both in schools and at the domestic level. Providing a career day in schools was seen having value by two participants. Speaking to students about respecting the estuaries as nurseries and all the value provided by natural habitats was something seen as missing from school curriculums. Learning about the ecology and how our seafood is intertwined, such as “where it lives, what it eats, what time of year is the best to catch it and all that” can help promote an ethic that could translate to making a living off the sea.

*“Go in and speak to the kids, at middle school level and up about opportunities that's available for you. You know, fishing, seafood, oyster, crabs, whatever, and make them aware that there's other opportunities other than, you know, going to college. If you want to go to college, then you can still come back and get that, but there's a lot of opportunities. You know, use the seafood area, the oceans, the waters that we have here... use those things to your advantage.”*

*“By working with the high school and the bass masters, they came down and my kids fishing team work with the bassmasters and I spoke with them. So when they caught a lot of fish, they asked me about where the best place to release the fishes. So I told them, you know, put some in Sampit River and put some in Black River and put some in Waccamaw River. So I try to preserve the fisheries. And I think that's more of what we need now to help preserve the fishery.”*

Participants had had previous success in introducing students to fisheries by coaching them in fishing tournaments. This has led to scholarship opportunities and opened new windows for kids and young adults that didn't previously have such exposure.

It was noted that on the business side of the equation, there are plenty of jobs in sales, cutting and management of seafood; it just requires a desire and strong work ethic. It also helps to have family involved in the business, as staying in the seafood sector is very hereditary. Also regarding the business and markets, participants said that if keeping seafood in-state as opposed to selling out-of-state would lead to better wages and more job opportunities, and further noted that there should be no reason that so much fish goes out-of-state. A seafood marketing program was another suggestion.

*“People come in the seafood market with the unrealistic expectation that they're going to get every fish they want the day they want it, whether it's in season or not. They don't understand seasons, or any of that stuff... I don't know that I learned anything about fish in school, I don't remember it... Maybe they should start a marketing program. You know. [Such as] we don't have triggerfish now, but we do have tilefish' or whatever it is.”*

One suggestion was to make a commercial fishing video game, a suggestion that was also mentioned in the Beaufort focus group. And similar to the other two focus groups, this group was under the impression that entry into mariculture would likely be easier than capture-based fisheries.

The following strategies are suggested for the S.C. Sea Grant Consortium to support ongoing and future commercial fishing/aquaculture and seafood workforce development needs in South Carolina based on participant feedback along with existing resources and other ongoing workforce initiatives. It is not intended to be an exhaustive list, but a starting point to build upon. Also included are suggested cost and effort categories (*low, moderate, or high*) that will be needed to implement such strategies.

Short-term (*within in a year*)

- Continue to support the McClellanville Watermen's Association and the Town of McClellanville in their endeavors in legacy planning for their working waterfront (*no cost, low to moderate effort*)
- Facilitate learning exchanges between the commercial fishing and seafood sector, agribusiness specialists, and insurance underwriters to work toward developing improved insurance options (*moderate cost, moderate effort*)
- Complete blueprint and feasibility study for potential commercial fisheries and aquaculture training program in McClellanville (*low cost, low to moderate effort*)

- Continue to support the development of the Gullah Geechee Seafood Trail (*moderate cost, moderate effort*)
- Develop internship opportunities to enhance diversity of mariculture workforce in SC through partnership with Minorities in Aquaculture (*low cost, low to moderate effort*)
- Develop and expand aquaculture toolkit resources to aid industry entrants in navigating permitting, seed procurement and business planning (*no cost, low effort*)

#### Mid-term (one to two years)

- Facilitate enhanced industry cooperation through the formation of co-ops, pooled buying agreements, and/or other forms of organizing (*low to moderate cost, moderate effort*)
- Facilitate capacity building and training opportunities for Gullah Geechee Seafood Trail members (*moderate cost, moderate effort*)
- Organize training, offer technical assistance and/or develop and share resources that promote opportunities for relevant business diversification (e.g. value added product development)
- Collaborate with schools or other youth development organizations to develop outreach programs that introduce youth (e.g. junior high, high school) to fishing, aquaculture and/or other seafood careers. (*low to moderate cost, moderate effort*)
- Continue to build public and private partnerships, including with technical colleges, to advance plans for a fisheries and aquaculture training program in McClellanville (*low cost, moderate to high effort*)
- Develop and go live with an SC Mariculture Lease Siting Tool to aid mariculture industry entrants in selecting an optimal lease site - a recently started project (*moderate cost, moderate to high effort*)

#### Long-term (3-5 years +)

- Collaborate with industry partners and fishing community members to develop an apprenticeship program, with a full time coordinator, compensated captain mentors, and quality candidates. This would require external funding. (*high cost, high effort*)
- Partner with communities beyond McClellanville, other South Atlantic Sea Grant programs, and industry partners to develop a **regional** fisheries and aquaculture workforce training program and/or center (*high cost, high effort*)
- Expand geographic reach of usual recruitment areas (*low cost, high effort*)
- Build public and private partnerships to preserve working waterfront spaces (*high cost, high effort*)

## APPENDIX III

### Georgia Focus Groups Summary

UGA Marine Extension and Georgia Sea Grant conducted two mixed focus group meetings with representatives from Georgia's commercial fishing, seafood, aquaculture, and charter captain industries in December 2021 to solicit feedback about workforce development challenges and opportunities associated with these sectors. The feedback received from these meetings along with other ongoing research and outreach initiatives at the regional and national level will help guide future workforce development programming in the state.

The first meeting took place at the Fish Dock Bar and Grill in Townsend (McIntosh County) on December 15<sup>th</sup>. Seven attendees representing the following sectors<sup>[1]</sup> participated in the meeting: shrimp (2), blue crab (*both hard and soft shell*) (2), wild harvested oysters (2), farm raised clams (2) and oysters (3), offshore finfish (1), processing and wholesale (2), retail (1), and restaurant (1). All participants were male, and five were white and two were African American. Participant age ranged from early 30s to over 60 years of age. Attendees' involvement in these sectors ranged from less than 5 years to over 40 years. One of the participant's wife, who is a local elected official also attended the meeting, but did not actively participate in discussions until after the meeting was formally concluded. The second focus group meeting occurred on Thursday December 16<sup>th</sup> at the Marine Extension and Georgia Sea Grant office in Brunswick (Glynn County). Seven attendees participated in this meeting representing the following sectors: shrimp (4), blue crab (1), in/nearshore charter captain (1) and retail (1). All seven participants were white with six male and one female. Participant ages ranged from mid-twenties to over 70 years of age. Attendees' involvement in these sectors ranged from 10 to over 40 years. Both meetings were facilitated by Bryan Fluech and Tom Bliss, and Gabi Welch took notes.

While traditional knowledge and skills associated with fishing/aquaculture (*i.e. boat handling, navigation, net mending, gear repair etc.*) were acknowledged as still being important, the notion of just being a "good fisherman" was recognized as not enough to remain successful in the industry anymore. Demonstrating sound business practices and being financially literate along with possessing a mix of relevant technical skills was recognized as being needed to prosper in the industry these days. Furthermore, strong interpersonal skills (*which participants mentioned are often lacking in the current workforce*) such as dependability, problem solving, adaptability, and self-motivation were also acknowledged as increasingly important.

Participants in both meetings identified a lack of reliable, competent and consistent help as a major threat to the sustainability of Georgia's fishing and aquaculture industries.

Several participants referenced having to modify how they operate in recent years due to not having reliable crews or workers on a consistent basis. For example, one shrimper recently sold his boat and now focuses on selling shrimp caught by others in the area. Another commented,

*“I had to change the way I did my business... my guys would not fish and work, being paid a percentage after ice, fuel, and everything else. I had to start paying them off the top. And at times I took a loss and they got paid because they wouldn't work. He wouldn't go fishing unless they were guaranteed to make a little something, because they could go somewhere and get \$10 an hour just by showing up or you know, they didn't want to invest the time of getting up at three or four o'clock in the morning, it rough, fighting the weather, and things tearing up to go out there for nothing.”*

There was general agreement about the benefits of workforce training to help sustain the industry long-term, but there was also strong sentiment that training alone will not be sufficient. Concerns about supply issues, increased operating costs, inconsistent work and income, complex regulations, high entry costs, and little to no retirement options were all mentioned as major obstacles to working in the industry. Lack of adequate insurance and financing were also acknowledged as compounding factors affecting the ability to recruit, hire and maintain an adequate workforce.

### Training Needs

One of the top workforce training needs identified by participants from both meetings was improved financial literacy. Being able to responsibly manage one's finances due to the volatility of the fishing/aquaculture industry was deemed absolutely essential to remain in the industry. Saving money for unexpected repairs or when fishing might not be as profitable was something that many meeting participants stressed is needed for anyone new to the industry. Furthermore, a lack of insurance and retirement options for most in the industry is further evidence for the need for sound financial management. The general sentiment from both groups was that it's important for fishermen to save what they earn as it will not be a matter of *if* something might happen, but *when* it will happen.

*“You can't live paycheck to paycheck, week to week. You have got to put money back, because you know, you're gonna throw up. That wheel is gonna get tore up. Net's gonna get tore up. Wintertime, you got to do upkeep. That's basically I tell you, the worst thing on them boats is not to have enough money fishing all year, wear it out and then not have really the right kind of money to get it back up going again. It don't get better. It just snowballs on you”*



*“... when you do have a good year, you know, you got to put money back for the bad years.”*

Building on the financial literacy theme, meeting participants also recognized the importance of sound business management to navigate the many uncertainties associated with the fishing/seafood industry. The importance of planning was mentioned several times, and developing a business plan was discussed as an important step in this process to get a better grasp of what it takes to function in the fishing/seafood business. Part of this plan would be determining what type of business one's operation is (i.e. LLC, S Corp etc.) and what this entails when it comes to accounts, taxes and other financial matters. Use of an accountant to help with filing taxes and other financial details was suggested if an individual could afford it.

*“When they catch a lot, they spend a lot and they're not financially disciplined. They're not business people. And now you've got to be both you can't be you can't just go catch something when you feel like you've got some bills coming through because sometimes it works and sometimes it doesn't, but you need to be disciplined.”*

*“There needs to be some kind of business management being taught. Because how to manage their money and their resources and coming in and you know, when your output and fleet exceeds your input, you're in trouble, you know?”*

Participants from all sectors also acknowledged the growing role of good customer service in the fishing and seafood industries even if they did not directly work with customers on a regular basis. Given the growing interests in sustainability, and local foods, building and maintaining solid relationships with customers was seen as valuable means to keep customers returning and generating income. In addition, participants acknowledged the need for good marketing to help “tell the story” about the safety and sustainability of Georgia seafood.

*“A lot of my marketing comes from telling them what time the boat's gonna be in, because what they want to see is the process. They will come buy them shrimp but they want to see them digging through that pile and getting everything out of it.... They buy shrimp, but they want to see them picking, getting them off the dock, like he was talking about with their legs still kicking. They know they're fresh then. They got a lot of people now that are really looking at your package of origin and I don't know who did that started that. Saying all they can find is stuff from overseas. Helping us you know, uh”*

*“And one of the ways you're gonna make money is to market it is sustainable and healthy. And we've got both of those things. So if we work on sustainable, healthy, local caught in the USA, we can get more money for it. And then we can pay the people*

*that get it more money. And then maybe the people that get it, if they get enough money, they can afford to do something that they*

Technical workforce training specific to the fishing/aquaculture industries was acknowledged as being needed. Participants from both meetings agreed on the value of hiring someone who already has basic knowledge and skills relevant to their sector(s) and has been “vetted” before starting with them. Among the various topics mentioned, safety was a top priority given the multiple dangers associated with the industry....“*They'll have to start with safety..*” Meeting participants liked the concept of well known (*and respected*) industry members leading technical courses assuming they were properly compensated. Emphasis would be placed on hands-on learning in the field to better prepare participants for working in the industry.

*“Like everyone's alluded to, it'd be cool to have some kind of credentialing to where you can have something, some reliable workforce, professional.*

*“ And so I think you can lecture about all this stuff in the classroom, but people want to be able to be out on the boat they want to be learning. And then you can supplement things like business knowledge and other things like mechanical knowledge.”*

It was suggested to offer training in a tiered approach by starting with simple duties (example knot tying) and building up to more complex tasks associated with working in the industry. As one participant commented,

*“I guess you start, like, you know, with Lego blocks.... You learn how to build stuff with blocks. So whatever the most simplest per industry, you start there. Like, alright you want to be an oyster farmer, you learn how to build a case. You wanna be a commercial blue crabber, you learn how to build a crab trap. Same thing shrimping, you know, you learn how to weave the net.*

Navigation, boat maintenance, as well as various trades needed to support the industry such as diesel mechanics, welding, electrical, carpentry, and fiberglassing were all mentioned as beneficial skills to possess. In fact, one shrimper commented that it might be more beneficial to focus training efforts on these types of support careers than on fishing-specific jobs. The same individual mentioned the need for basic computer training as well, given the increased reliance on them.

*“And you'd be surprised how many people cannot operate a computer... 80% of the shrimpers around here have computers. And they don't know how to operate it.”*

The need for more trained net menders was also mentioned by shrimpers in both meetings given the growing issue of shark depredation on their gear. Basic marine

biology and fisheries management and science were also acknowledged as important knowledge to possess by all participants as well.

When asked about developing apprenticeships to continue technical training opportunities, there were mixed responses. In general participants were not against the concept as it could be a good opportunity for an individual to find out if they really wanted to be in the industry. However, there was general agreement that adequate funding would be needed to support the mentor and apprentice. Interestingly, when asked what an appropriate amount might be to pay an apprentice, many participants had trouble naming a specific amount. Several participants commented that “*no amount of money*” will be enough to keep someone involved if they truly are not passionate about wanting to be there. It was also acknowledged that proper liability insurance would be needed for participants taking on apprentices. The ability to get such insurance might vary depending on the sector. There were concerns about finding qualified mentors who had the time and patience to take on such a responsibility. One shellfish harvester commented he would want someone with at least a year of experience under their belt before he’d be willing to take someone on as an apprentice.

*“That's the only way it would work is apprenticeship with funding because you don't want financing...”*

*“Well, if they were gonna come as an apprenticeship, you ideally want them to be covered with insurance of some sort of state labor-kind worker, and you don't have workers comp on federally documented vessels. So that's going to be a different thing. You can get workers comp on aquaculture people. You can't on shrimp boats.”*

### Opportunities

Despite the challenges discussed about the current state of the industry and many obstacles to entering and getting established in it, participants from both meetings commented that money can still be made in these industries if individuals are willing to work “*smart and hard*.” Participants felt this fact needs to be better communicated to future workforce participants along with honest realities associated with this career choice such as working long hours and intense physical labor at times (*often in extreme conditions*). However, working with one’s hands and being on the water while remaining fairly independent of others are also attributes that certain audiences might find appealing about this career choice. These aspects should be promoted to future industry members as a way to recruit the “*right type of people*.” Due to concerns with the quality of local workforce options, participants felt future recruitment will most likely need to come from outside the coastal region unless new initiatives are developed. One shellfish grower mentioned he’s even looking into recruiting foreign workers through the use of H-2A programs. Several participants suggested recruitment efforts

should target those not interested or who can't afford to go to college, but that are interested in a trade-related career.

Participants from both groups agreed that exposure to the fishing/aquaculture and seafood industries should begin much earlier (*elementary and middle school aged youth were mentioned*) than is currently done. Participants suggested the expansion of career pathway programs like the one started in 2019 at McIntosh County Academy that expose younger audiences to fishing/aquaculture career opportunities, the types of knowledge and skills needed to be successful in them and potential challenges and opportunities they may face. One participant also suggested working with 4-H and other Extension programs to expose younger children to relevant career opportunities like is done for the agriculture industry. Other suggestions included engaging Navy JROTC programs in high school given the mutual interest in oceans, seamanship and navigation as well as with marine biology programs in schools. In terms of aquaculture careers, there was a suggestion of having a high school program manage a shellfish lease where students could gain experience raising clams and/or oysters while in school.

*“I think you could probably work with industry that already have leases and do a co-op with the university... There's industry people they could, you know cut off an acre say, you know, take this class but then go work on it. And then whatever they harvest off of it then they can take.”*

The notion of finding niches to generate extra income was mentioned several times by meeting participants working in the shrimp, blue crab, charter and shellfish sectors. Direct marketing of seafood, catering, fishing in multiple sectors, and additional trade work (ex: mechanic, electrician, net mending etc.) were mentioned as examples where participants found new ways to generate income. One shrimper added that he has generated additional business by becoming a “go-to guy” for many fishermen to install and maintain navigation software on their boats. Participants from both meetings mentioned the growing popularity of ecotourism and opportunities to incorporate tours in their own operations assuming they had appropriate liability insurance. A charter captain commented about the public's growing desire to be more engaged in the outdoors (particularly because of the pandemic), but are less capable of doing it than in the past as

*“Yeah, just to try to come up, you know, with some niches that nobody else was doing and try to give you some income sources, you know, when one thing's a little down, you know?”*

*“Yeah. Eco tourism is big. So I'll say while a lot of this stuff's on the downslide, ecotourism it's huge. And the umbrella. Yeah. And what you can do in the Ecotourism world now is almost unlimited... if you can come up with an idea. And you can do it*

*safely. And you can do it well, and you can do it over and over again, repeatedly. You can get people to get on board and do it.*

Several existing resources that could help support workforce development needs were mentioned during the meetings. Examples included local technical colleges, Coast Guard, Georgia Department of Natural Resources, Sea School (captain training), and Marine Extension and Georgia Sea Grant. One captain recommended utilizing UGA Small Business Development Center (SBDC) to assist individuals in the fishing/aquaculture industry help set up, plan and and manage their operations. Their services are free, and can provide ongoing assistance to help grow and sustain their businesses.

### Workforce Development Strategies

The following strategies are suggested for Marine Extension and Georgia Sea Grant to support ongoing and future commercial fishing/aquaculture and seafood workforce development needs in Georgia based on participant feedback along with existing resources and other ongoing workforce initiatives. It is not intended to be an exhaustive list, but a starting point to build upon. Also included are suggested cost and effort categories (*low, moderate or high*) that will be needed to implement such strategies.

#### Short-term (*within in a year*)

- Continue to identify and compile existing assets on the Georgia coast (*and beyond*) that can contribute technical expertise, funding, and/or other resources etc. to support relevant workforce training opportunities for the industry. (*no cost, low to moderate effort*)
- Identify, share and/or develop relevant commercial fishing/aquaculture business fact sheets/resources to assist individuals wanting to enter and/or expand their businesses. Examples could include, but not be limited to: business start up, finance/loan support programs, permitting requirements, creating business plans, succession planning, etc. (*no cost, moderate effort*)
- Promote the free services of UGA Small Business Development Center to assist business owners and those wanting to enter, sustain, and/or expand their fishing/aquaculture-related businesses. (*no cost, low effort*)
- Support the McIntosh County Academy Commercial Fishing Pathway Program with ongoing outreach/technical assistance to sustain and build the program (*low cost, low to moderate effort*)



- Continue offering existing training programs such as seafood HACCP, oyster aquaculture start up (*beginning in 2022*) and commercial vessel drill conductor safety annually

#### Mid-term (*one to two years*)

- Collaborate with UGA SBDC and/or other relevant business-related entities (ex: SBA, SCORE etc) to develop business/financial management training specifically geared for fishing/aquaculture industry participants\* . (*low to moderate cost, moderate to high effort*)
- Coordinate with marketing experts to develop industry-relevant marketing training for fishing/aquaculture businesses; (*low to moderate cost, moderate to high effort*)
- Seek and build partnerships (*ex: technical college system, Georgia Association of Marine Businesses, SINERR Coastal Training Program, and/or individual industry members*) to develop and implement technical training geared towards industry needs: examples can include, but not be limited to diesel engine repair, electrician/wood working, welding, net mending\* (*moderate to high costs, moderate to high effort*)
- Organize training, offer technical assistance and/or develop and share resources that promote opportunities for relevant business diversification including, but limited to eco/agr/heritage tourism, value added product development and distribution, direct marketing strategies, cooperatives etc.
- Collaborate with 4-H or other youth development organizations to develop outreach programs that introduces youth to commercial fishing, aquaculture and/or related career choices. (*low to moderate cost, low to moderate effort*)
- Develop an advisory group (*within and outside of industry*) to identify funding opportunities, build capacity and provide input on how to enhance/expand relevant workforce development initiatives

*\*when possible identify funding sources and/or sponsors to help supplement industry participation costs*

#### Long-term (*3-5 years +*)

- Partner with other Sea Grant, community and industry partners to investigate the feasibility of a regional training facility (or program) specifically focused on fishing

and/or aquaculture industry workforce development in the south Atlantic region.  
(*high cost, high effort*)

- Collaborate with industry partners to create an apprenticeship program led by trusted industry professionals funded by grants so that both mentor and apprentice are compensated and covered; may be more appropriate for the aquaculture industry due to liability issues. (moderate to high cost, high effort)
  - Consider revamping R/V Georgia Bulldog to a commercial vessel where programs are taught how to run/maintain vessels, catch and market shrimp.
- Develop high school aquaculture programs where schools have access to lease sites to grow and market their own shellfish

While the programs listed below are only a subset of existing workforce training initiatives across the country, they are examples to consider adopting for Georgia's workforce needs based on participant input

#### **North Carolina Shellfish Farming Academy**

- Community College Mariculture Training Program
- <https://carteret.edu/corporate-and-community-education/continuing-education-classes/cced-aquaculture/>
- Contact: David Cerino, [cerinod@carteret.edu](mailto:cerinod@carteret.edu)

#### **Alaska Longline Fishermen's Association's Crew Training Program**

- Paid apprenticeship
- Fishermen get to pick who is on their crew
- Provide raise for crew members as experience increases
- <https://www.alfafish.org/crewtraining>
- Contact: Tara Racine, [alfa.outreach@gmail.com](mailto:alfa.outreach@gmail.com)

#### **FishBiz Project**

- Free online commercial fishing business management resource
- <http://fishbiz.seagrant.uaf.edu/>
- Contact: UAF, [UAF-fishbiz@alaska.edu](mailto:UAF-fishbiz@alaska.edu), Sunny Rice, [sunny.rice@alaska.edu](mailto:sunny.rice@alaska.edu)

#### **California Commercial Fishing Apprenticeship Program**

- Apprenticeship/workshop
- Paid as crew
- <https://caseagrant.ucsd.edu/apprentice#:~:text=The%20training%20program%20will%20take,%24500%20to%20%241000%20before%20scholarships.>
- Contact: Theresa Talley, [tstalley@ucsd.edu](mailto:tstalley@ucsd.edu)

### **Shark Aquaculture Life Training (SALT)**

- High School Aquaculture Program
- <https://sites.google.com/levyk12.org/salt/home>
- Contact: University of Florida Institute of Food and Agriculture, Sciences Extension 352-543-5057; [LNST@ufl.edu](mailto:LNST@ufl.edu)

### **Off-Bottom Oyster Farming Fundamentals Course**

- Aquaculture workshop
- 5 weekend mornings
- Contact: Jason Rider, [jason.rider@dmr.ms.gov](mailto:jason.rider@dmr.ms.gov)
- <https://dmr.ms.gov/oboa-training-program/>

### **Yankee Fisherman's Cooperative- New England Young Fishermen's Alliance- Training Program**

- Apprenticeship/Fellowship
- <https://www.seacoastonline.com/story/news/2021/12/16/saving-nhs-fishing-industry-help-way-for-young-fishermen/8897060002/>



*A commercial crabber sets out one of his pots. Image credit: Marine Extension and Georgia Sea Grant*