

Gulf of Mexico Commercial Fishing and Aquaculture Workforce Development Frameworks

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Project Team

This endeavor was part of the National Sea Grant-funded “Food from the Sea” project to the Gulf of Mexico programs.

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Wild Harvest

Baitfish - Florida Only

1. Background

- Baitfish is predominantly wild caught via netting and is subject to change in the season. For 2021, the Florida Fish and Wildlife Conservation Commission (FWC) reports 590,080 pounds of baitfish landed for the commercial sector (valued at \$806,713).
- Most recruitment to the fishery is done by word of mouth, and it is incredibly hard to find workers going out on boats.
- Many bait fish sellers are small bait shops and can easily fill positions.

2. Needs Assessment and Audiences

- Captains, boat owners and wholesalers provided the following feedback:
 - Barriers to entry include regulations and cost of living (a few respondents mentioned greatest barrier was a strict work ethic).
 - Pay is not great due to subpar catches, and the need for overhead drives prices up.
 - Repairs are expensive, and the job can become dangerous with little funding.

3. Training Needs/Curriculum Outline

- Crew training needs
 - There were not any areas in training that needed improvement.
 - The most important training was boating safety, rules and regulations, and seafood safety.
- Boat owner training needs:
 - Boat owners needed training in boat repair (rated as the most important), business planning and gear repair.
 - The following trainings were either neutral or did not require further training:
 - Boating safety
 - Fish species identification
 - Gear type and handling
 - Knot tying
 - Rules and regulations
 - Navigation
 - Seafood safety
- Retailer training needs:
 - Retailers for baitfish had concerns over training with business planning, fish species identification and gear repair.
 - Boat repair was deemed not available.
 - Of these, fish species identification was placed as the most important, with business planning being second.
 - The following trainings were deemed adequate:

- Industry etiquette
 - Navigation
 - Seafood safety
 - Rules and regulations
- Captain training needs:
 - Baitfish captains were most concerned with training for business planning and boat repair.
 - Boat repair was deemed more important, but business planning was lacking.
 - The following trainings were deemed adequate:
 - Boating safety
 - Species identification
 - Gear repair and handling
 - Knotting
 - Industry etiquette
 - Navigation rules and regulations

4. Formats

- Strongly recommend there be an in-person or apprenticeship format for training.

5. Recognition of Training

- Overwhelmingly supported a printed certificate and recertification every five years.

6. Existing Resources

- None mentioned.

7. Partners

- Fishermen suggested FWC as the being the entity that needs to be responsible for training.
- The combination of internships and apprenticeships was the second highest, but many suggested that navigation and repairs should be taught in school.

8. Needed resources

- Pay could be better due to subpar catches and need for overhead drives prices up.
 - Complaints that the IFQ program was the single most detrimental thing to fishermen
- Repairs are expensive, the job can become dangerous with little funding.
 - Government subsidies could help bait fishermen supplant the cost of entry into the fishery.

Blue Crab

1. Background

- Blue crabs can be found and are commercially harvested in all five Gulf states. Louisiana landings make up more than 80 percent of all Gulf blue crab landings and 25 percent of all domestic blue crabs. Western Florida has the second most landings in the Gulf followed by Texas, Alabama and Mississippi.
- Blue crabs are harvested year-round, with peak harvest occurring in June and July.
- In the past, blue crab landings accounted for up to 10 percent of all Florida Gulf fish landings. In 2021, the Florida Fish and Wildlife Conservation Commission (FWC) recorded 5,665,387 pounds landed, valued at \$13,120,521.
 - In 2007, FWC implemented a Blue Crab Effort Management Plan (BCEMP) to address concerns about overcapacity and seasonal overcrowding of traps in certain zones. The BCEMP reduced license numbers dramatically though the use of a moratorium on new licenses and the fishery has shrunk ever since.
 - More than 65 percent of blue crabs in the state of Florida come from the Gulf side.
- For first-generation blue crabbers, it is difficult to be successful without experience finding crabs.
- Louisiana now requires a training program for new entrants into the fishery.
- Most training is done through partnerships with experienced crabbers.
- Almost all hiring is done through word-of-mouth, or not at all, with many working alone.
- Soft shell crab production can be an add-on business for many fishermen, docks or processors, but overall production has declined in recent years.

2. Needs Assessment and Audiences

- Florida boat owners, captains' and retailers' feedback:
 - Blue crabbers feel commercial fishers' bad reputation is killing the industry.
 - Aid from FWC is limited due to lost traps being difficult to regulate.
 - Recreational fishermen will cut commercial crab traps.
 - Work ethic is very difficult, and hard workers don't want to join a dangerous industry.
 - Regulation and permits are difficult to navigate for new crabbers.
 - Training is only readily available through partnerships with other crabbers.
- The greatest need identified in the Sea Grant needs assessment was professionalism and leadership in the existing workforce.

3. Training Needs/Curriculum Outline

- Boat owner/captain training needs:
 - Boat repair
 - Business planning
 - Pricing of product
 - Public image
 - Taxes
 - Marketing

- Not just social media use
 - Pricing at dock vs. processor
 - Public image
- Gear repair and handling
- Fish species identification (including what they can keep and not keep)
- Industry etiquette
- State-specific rules and regulations
 - Entry into the fishery
 - Texas has limited access
 - Louisiana has training requirements for access with multiple new regulation changes over the last decade
- Handling of bycatch (including terrapins)
- Participation in policymaking
- Product handling
 - Sponges/dead crabs
 - Busters and peelers
 - Disease issues
- Derelict gear avoidance (including placement to avoid navigation)
- Proper crab trap marking
- Retailer/wholesaler training needs:
 - Business planning
 - Fish species identification
 - Seafood safety (most important and needs most improvement)
 - Rules and regulations
 - Industry etiquette
 - Product handling
 - Sponges/dead crabs
 - Busters and peelers

4. *Formats*

- In Florida, the reaction to all formats were positive, but in-person and apprenticeships were favored over online training. Hybrids were also popular.

5. *Recognition of Training*

- Most of the participants wanted recognition in a printed certificate.
- Many preferred trainings that don't require recertification.

6. *Existing Resources*

- Alaska Marine Safety Education Association (AMSEA)/Red Cross
- Sea Grant
- NOAA – Turtle Excluder Device (TED)/Bycatch Reduction Device (BRD) regulations
- U.S. Coast Guard (USCG) – safety regulations
- Marketing planning

- Creating a Marketing Plan for your Business (with templates) www.indeed.com/hire/c/info/creating-a-marketing-plan#4
- A Step-By-Step Guide to Your 2022 Marketing Planning www.statsocial.com/2022-marketing-planning-guide
- What is a Marketing Plan and How to Write One [+Examples] <https://blog.hubspot.com/marketing/marketing-plan-examples>
- Business planning
 - Fish Biz - <https://fishbizplan.org/>
 - Ready - www.ready.gov; www.ready.gov/business
 - Ready Business will assist businesses in developing a preparedness program by providing tools to create a plan that addresses the impact of many hazards. This website and its tools utilize an “all hazards approach.”
 - Industry focused entities:
 - Louisiana Crab Task Force
 - Gulf States Marine Fisheries Commission Crab Subcommittee

7. Partners

- The most suggested partnership was an apprenticeship.
 - It was not suggested that these apprenticeships should follow an internship or a college program.
- The Fish and Wildlife Commission was the second most suggested option for being responsible for industry training.

8. Needed Resources

- In Florida, aid from FWC in training and education is wanted.
- Apprenticeships could help crabbers learn to better navigate and optimize catches.
- Changing narratives on the commercial fishing industry could help get more people employed in this sector.
- Blue crabbers are concerned with processing and picking plants being scarce.
- Insurance for new industry.
- Time/capacity
- Young people and recruiting existing crabbers for apprenticeships
- Technology – smartphone only/limited tech capacity
- Non-English speakers – Vietnamese, Cambodian, Spanish (Florida/Texas)

For-Hire/Charter Sector

1. Background

- Importance and value fishery/sector:
 - The Gulf of Mexico (GOM) boasts a thriving recreational fishing industry, which contributes 30 percent of the national recreational catch and 29 percent of the

total number of national recreational trips ([NMFS 2022 a](#)). The GOM recreational fishery has the greatest economic impacts in Florida, Louisiana and Texas ([Lovell et al. 2020](#), [NMFS 2022 b](#), [Ropicki et al. 2016](#)). In 2019, 50 million recreational fishing trips were taken in the Gulf of Mexico, more than double the number of trips taken in 2011 (22 million trips, [Ropicki et al. 2016](#)). These trips had a value of more than \$12 billion, representing charter fees, ice, bait, fuel, vessels, tackle, equipment, maintenance and repairs, and other expenses associated with recreational fishing trips. Of these, 1,684,000 were for-hire trips ([NMFS 2022 b](#)). Table 1 below shows the economic impact of the Gulf of Mexico’s for-hire fishing industry by state, including the number of trips taken and the number of jobs supported in 2019 ([NMFS 2022 b](#)).

- Comparing these economic impacts with values reported from earlier years shows how much this sector has grown. For example, the number of 2019 GOM for-hire fishing trips represents a 49 percent increase from the number of for-hire trips reported for 2017 by Lovell et al. ([2020](#)) and a 35 percent increase from NMFS’ estimations for 2017 ([NMFS 2022 b](#)). Additionally, the for-hire sector currently supports more than 10,000 jobs, compared to approximately 8,000 jobs in 2017 and 6,000 in 2012 ([Lovell et al. 2020](#), [Ropicki et al. 2016](#)).
- Gulf of Mexico coastal communities rely heavily on the seafood industry, including for-hire and commercial fisheries, for economic stability and growth, and notable economic contributions from fishing sectors have sustained networks of fishing communities that define the Gulf coast to this day. However, these industries and their way of life are threatened by a significant lack of new entrants to these sectors, known as the “graying of the fleet” phenomenon. In addition to the economic need for sector-specific training programs, there is also a significant cultural need to keep for-hire fisheries thriving in the Gulf of Mexico.

State	# For-Hire Adult Trips	# Jobs	Sales	Income	Value Added	Trip Expenditures
Alabama	136,000	1,122	\$101,248,000	\$31,755,000	\$55,675,000	\$66,686,000
Louisiana	169,000	1,746	\$147,598,000	\$46,317,000	\$78,576,000	\$92,007,000
Mississippi	20,000	200	\$16,798,000	\$5,118,000	\$8,895,000	\$11,011,000
Texas	375,000	2,147	\$247,445,000	\$83,502,000	\$149,011,000	\$146,402,000
W. Florida	984,000	5,321	\$568,193,000	\$197,723,000	\$338,355,000	\$320,528,000
Total	1,684,000	10,536	\$1,081,282,000	\$364,415,000	\$630,512,000	\$636,634,000

Table 1. Economic value of for-hire fishing trips taken in the Gulf of Mexico in 2019 (NMFS 2022).

- Current status of fishery sector:

- The industry is growing with more individuals becoming fishing guides across the Gulf. Charter/for-hire captains can operate in federal waters, state waters (nearshore bays) or both. Anglers and captains should be aware of the various regulatory pathways for the type(s) of fishing they currently do or would like to do.
- Approximate number of currently registered fishing guides in each state:
 - Texas: 1,500
 - Louisiana: 755
 - Mississippi: 200 (2019)
 - Alabama: 1,122 (2019)
 - Florida: 4,600

2. Needs Assessment Findings and Audiences

- For-hire audiences:
 - For-hire/charter captains (offshore, inshore/bay, party boats)
 - Crew/deckhands (mainly offshore boats)
- Needs assessments:
 - Texas completed a needs assessment of the for-hire/charter sector in 2021, in which fishing guides were surveyed about the industry's current practices, educational needs and challenges. Knowledge from personnel across the Gulf states and findings from Texas' needs assessment were incorporated into this framework.
 - While this framework is designed for the coastal Gulf of Mexico region, there are some differences among the states. Mississippi and Alabama suffer from some of the highest poverty rates in the country, at No. 1 and No. 5 respectively (U.S. Census Bureau 2020). The Comprehensive Economic Development Strategy (CEDS) for both Mississippi and Alabama identified workforce training as being critical for economic growth to alleviate significant skill gaps and shortages in these states, as well as underemployment. Similarly, many communities in coastal Texas also fall below the poverty level. These communities include individuals who choose not to work, who lack the skills needed to obtain employment and those who may be trainable and hireable but who lack the resources to find and maintain employment.

3. Training Needs/Curriculum Outline

A. Education on Career Opportunities Needed.

- Audience includes existing and potential new fishing guides and crew.
- Exposure to possible career options for young professionals and those who may be switching careers.
 - Introduce young people to the industry as a potential career
 - Individuals who enter the industry from another role in the fishing industry
 - Individuals who enter the industry by switching from an unrelated career
 - Retirees looking for something new and fun to do

- Can consider targeting similar industries to recruit new entrants, such as those who work in science, conservation, environmental education or tourism
- Career pathways (e.g., begin as crew/deckhand and work one's way up to captain/transition to for-hire sector from another fishing sector/work as a captain for an existing business/start own business right away/eventually progress to owner, etc.)

B. Business Planning

- Finances - includes captains/owners; crew where indicated.
 - General financial literacy
 - Awareness of anticipated costs, including capital needed to start a new business, resources to look for and secure loans, costs for vessel purchasing/repair/maintenance, equipment, electronics, insurance, permits/licenses and other associated costs.
 - Career advancement potential (e.g., how to progress from a deckhand to captain)
 - Taxes (audience also includes crew)
 - Bookkeeping
- Business plans
 - Requires training in entrepreneurship, direct marketing, supply chains, traceability of products/growth and fishing-related considerations (e.g., sustainable fishing practices, ecological knowledge and other topics from Section E of this framework)
- Marketing
 - Creating your own website vs. using an existing trip booking website
 - Use of social media, data and analytics to make effective business decisions
 - Depicting best practices and not reinforcing negative behaviors in the angling community that recreational fishermen may imitate (e.g., handling large fish out of the water, holding live fish incorrectly, not photographing fish while still in the water, keeping extra fish that you don't plan on eating)
 - Participating in conservation programs, data collection programs (landings reporting programs, dockside interviews), groups and industry certifications such as the Florida Friendly Fishing Guide to market operations to eco-minded clients
- Insurance
 - Insurance requirements vary by state. Even if not legally required, industry members are strongly encouraged to have insurance to cover themselves, employees, clients and equipment in case an incident occurs. Recommendations may vary based on the size and scope of the business.
 - Insurance policies may include the following coverages: general liability, professional liability, collision and/or comprehensive coverage, passenger liability, medical, property, uninsured/underinsured boater, on-water towing, pollution, business income, commercial auto insurance, etc.

C. Drug Testing

- Requirements may vary by state
 - Required by U.S. Coast Guard for obtaining and renewing licenses, also random drug testing program
 - National Maritime Center’s Drug Test Requirements for a Merchant Mariner Credential (MMC) - www.dco.uscg.mil/Portals/9/NMC/pdfs/drug_testing/drug_test_requirements.pdf

D. Professionalism (captains, crew where indicated)

- Discuss policies with clients before the trip to set expectations and post policies on websites/social media (audience also includes crew).
 - Safety briefings
 - Code of conduct
 - Fish retention: Are clients staying in accommodations with cooking facilities, will they want to take fish back with them, how much fish will they get to keep, will the captain/crew filet and clean the fish for clients, bag limits and seafood safety
 - Financial: Deposits, cancellations/refunds, gratuities
 - Client base/experience: Minimum age for customers, kid-friendly trip availability, gear clients required to provide, prohibited items, species clients want to target
- Experience/knowledge/skills that are recommended, even if not required, to obtain licenses (audience also includes crew), such as
 - Knowledge of local ecology, local waterways, fish behavior, fish cleaning skills, fish identification, knot-tying, boat handling, familiarity with commonly used recreational fishing gear
 - Interpreting changing environmental conditions such as weather and tides
 - Usage of social media as an outlet for educating clients and potential clients, and promoting one’s business
 - Engagement in fisheries management or conservation (e.g., Gulf of Mexico Fishery Management Council or Gulf States Marine Fisheries Commission meetings, clean-ups, other efforts)
 - “Soft skills,” include leadership, communication, conflict resolution, etc.
- Potential Partners
 - Economic Development Authority
 - U.S. Coast Guard
 - Texas Parks and Wildlife Department (TPWD)
 - Louisiana Department of Wildlife and Fisheries (LDWF)
 - Mississippi Department of Marine Resources (MDMR)
 - Alabama Department of Conservation and Natural Resources (ADCNR)
 - Florida Fish and Wildlife Conservation Commission (FWC)
 - Financial institutions (loans)
 - Universities or other adult education institutions (financial literacy education)
 - Louisiana Fisheries Forward

- Business planning experts (re: policies)
- Experienced, well-respected fishing guides

E. Regulations

- Federal for-hire/charter fishing licensing requirements:
 - www.dco.uscg.mil/nmc/charter_boat_captain/
 - U.S. Coast Guard requirements: Merchant Mariners Credentials (MMC) and Officer of Uninspected Passenger Vessel (OUPV) license requirements
 - Physical exam taken within 12 months, drug test taken within six months, written test, first aid and CPR certification taken within 12 months, Transportation Worker Identification Credential (TWIIC) card
 - 360 days of documented sea time, of which 90 are days of service on the ocean, near coastal or Great Lakes waters
 - Renewed every five years
 - Need proof of USCG license to obtain state license
 - Gulf Charter/Headboat for Reef Fish For-Hire Fishing Permit (limited access): www.fisheries.noaa.gov/permit/gulf-charter-headboat-reef-fish-hire-fishing-permit-limited-access
 - Gulf Charter/Headboat for Coastal Migratory Pelagic Fish For-Hire Fishing Permit (limited access): www.fisheries.noaa.gov/permit/gulf-charter-headboat-coastal-migratory-pelagic-fish-hire-fishing-permit-limited-access
 - Atlantic Highly Migratory Species Charter/Headboat Permit (open access): www.fisheries.noaa.gov/permit/atlantic-highly-migratory-species-charter-headboat-permit-open-access
 - Permits for some Highly Migratory Species are limited entry, review regulations and permit options at www.fisheries.noaa.gov/atlantic-highly-migratory-species/atlantic-highly-migratory-species-permits
 - Federal requirement: All charter, headboat and dually-permitted vessels with federal Gulf of Mexico Reef Fish or Coastal Migratory Pelagic permits must comply with both Phase 1 and Phase 2 requirements of the federal Southeast For-Hire Integrated Electronic Reporting Program (SEFHIER): www.fisheries.noaa.gov/southeast/recreational-fishing-data/southeast-hire-integrated-electronic-reporting-program
- Fishing license requirements by state:
 - Texas: <https://tpwd.texas.gov/regulations/outdoor-annual/licenses/fishing-licenses-stamps-tags-packages/fishing-licenses-and-packages>
 - Louisiana: www.wlf.louisiana.gov/page/forhirecharter-fishing-licenses-and-permits
 - “Certified” fishing guide - individual earns at least 50 percent of their income from charter fishing guide activities
 - Recreational Offshore Landing Permit: <https://ldwf.wlf.la.gov/rolp/FAQ>
 - Charter Captain Requirements Overview: <https://www.lafisheriesforward.org/wp->

[content/uploads/2019/07/LFF_FastFacts_CharterFishing_06-2018-1.pdf](#)

- Mississippi: www.mdwfp.com/license/fishing/
- Alabama: www.outdooralabama.com/license-information
- Florida: <https://myfwc.com/license/commercial/saltwater/charter/>
 - Florida Fishing Guide Requirements Checklist: <https://edis.ifas.ufl.edu/publication/FA218>
- Federal fishing regulations:
 - Code of Federal Regulations - 50 CFR 622: www.ecfr.gov/current/title-50/chapter-VI/part-622
 - NOAA Fisheries Southeast Region: www.fisheries.noaa.gov/southeast/rules-and-regulations/fishing-regulations-and-seasonal-closures-gulf-mexico
 - Summary of species regulations for federal waters by the Gulf of Mexico Fishery Management Council: <https://gulfcouncil.org/wp-content/uploads/Recreational-Regulations.pdf>
- Resources for state fishing regulations:
 - Texas: <https://tpwd.texas.gov/regulations/outdoor-annual/fishing/>
 - Louisiana: www.wlf.louisiana.gov/subhome/recreational-fishing
 - Mississippi: <https://dmr.ms.gov/recreational-catch-limits/>
 - Alabama: www.outdooralabama.com/saltwater-fishing/saltwater-regulations-and-enforcement
 - Florida: <https://myfwc.com/fishing/saltwater/recreational/>
- Other training topics:
 - Understanding of differences in regulations between state and federal waters
 - Compliance with regulations
 - How to remain informed about regulation changes and reasoning behind changes
 - Boat regulations - titling, registration, vessel monitoring systems (VMS), required safety gear, other requirements
- Potential Partners
 - Federal and state management entities:
 - NOAA
 - Gulf of Mexico Fishery Management Council
 - Texas Parks and Wildlife Department
 - Louisiana Department of Wildlife and Fisheries
 - Mississippi Department of Marine Resources
 - Alabama Department of Conservation and Natural Resources
 - Florida Fish and Wildlife Conservation Commission
 - U.S. Coast Guard
 - Department of motor vehicles (boat registrations)

F. Disaster Planning and Preparedness (needs varies based on current level of preparedness by state/individual)

- Make and annually update a disaster plan

- Communication plan for communicating with employees and customers who had their trips canceled or who still have trips booked
- Storage of important documents during disasters
- Evacuation/shelter plan
- Financial plan for emergencies
- Damage assessment plan
- Keep an emergency fund in case of disasters (at least three to six months of operations funds). This includes crew in case they are out of work for a while after a disaster.
- Identify local, state and federal resources to assist after a disaster. This includes crew.
- Preparing Your Boat for a Hurricane video - www.youtube.com/watch?v=Rdl6VCPmnME&t=3s
- Insurance claims for those who have insurance (captains/owners)
- Relief opportunities (insurance claims vs. FEMA assistance, Small Business Administration, loans, other sources). This includes crew.
- Potential partners:
 - Federal Emergency Management Agency (FEMA)
 - Small Business Administration (SBA)
 - State departments of emergency management
 - Texas Parks and Wildlife Department
 - Louisiana Department of Wildlife and Fisheries
 - Mississippi Department of Marine Resources
 - Alabama Department of Conservation and Natural Resources
 - Florida Fish and Wildlife Conservation Commission

G. Sustainability/Environmental Stewardship (level of need depends on location as some communities are very knowledgeable and involved in sustainability efforts while others are less so)

- Familiarity with local flora and fauna
- Identification of commonly misidentified fish species
- Fish life history concepts (reproduction, age and growth, fishing mortality)
- Encourage catch-and-release fishing where appropriate
- Reef fish best practices
- Share knowledge with guests during each trip
- Familiarity/use of release tools (dehooking, venting, descending devices) (high priority)
- Best practices for reducing human impacts and ecosystem interactions
 - Avoid anchoring on seagrass beds or coral reefs
 - Interactions with marine life (e.g., don't feed, harass or touch sea turtles, dolphins, seabirds, etc.)
 - What to do if you hook a seabird, marine mammal or sea turtle, including local wildlife rehabilitation contacts
 - Marine debris: Containing trash on vessels, monofilament recycling, pick up floating trash

- Promote the use of reusable items on fishing trips that are alternatives to single-use plastics (e.g., encourage clients to bring reusable water bottles and food/drinks that aren't in plastic packaging)
- Disposal of fish carcasses and bait
- Ecotourism opportunities and training
- Potential partners:
 - Texas Parks and Wildlife Department
 - Louisiana Department of Wildlife and Fisheries
 - Mississippi Department of Marine Resources
 - Alabama Department of Conservation and Natural Resources
 - Florida Fish and Wildlife Conservation Commission
 - Mississippi State University Marine Fisheries Ecology's Fishermen Invested in Science, Healthy Ecosystems and Sustainability (FISHES) course
 - Return 'Em Right Program
 - Non-profit conservation organizations
 - Other local, state or national agencies

H. Cross-sector Topics

- Safety (offshore vs. nearshore trips)
 - Prior needs assessment indicated that most captains review safety procedures with clients at the start of their trips, but 26 percent of captains were not up to date with their CPR/first aid certifications, and most of the crew were not trained in CPR/first aid (Texas)
 - Increase the frequency that captains inspect safety equipment on their vessels
 - Servicing and disposal of used or expired safety equipment such as flares
 - Brief clients at the start of every trip
 - Potential partners:
 - U.S. Coast Guard
 - Fire departments
 - YMCA
 - American Red Cross (first aid/CPR training)
 - State agencies that offer boating safety classes
- Navigation/electronics/basic maintenance
- Technical skills (mechanic, welder, electrician, pipefitter)

4. *Formats*

- Individuals already established in this sector are more likely to prefer online training due to enhanced computer literacy/younger individuals entering the sector.
 - Self-paced online modules for guides who prefer online training, with the possibility of in-person workshops for those who prefer (offer one to two times per year)

- In-person training considerations: Individuals new to the industry will need hands-on training and practical experience that an online course cannot provide
 - In-person training participation may be limited by location/travel distance, participant financial status, advertising/industry awareness of the training opportunity, fishing days participants will miss
- Opportunities for mentoring, internships and/or apprenticeships to attract and train new entrants on the job. Explore partnerships with industry leaders who are willing and able to take on inexperienced crew and train them (some captains may not be interested if they think it will impact their business' efficiency)
- Accessibility: Ensure Americans with Disabilities Act compliance and inclusivity for accommodations for all types of training as needed (e.g., multiple languages, closed captioning and audio for online modules/videos, alt text for web-based materials, sign language interpreter for in-person training if needed, etc.)

5. Recognition of Training

- Incentives
 - Incentives to participate in training would greatly help participation
 - Free gear, like mesh bags for containing trash on boats or release gear like Seaqualizers, are being distributed by Return 'Em Right
 - Gift cards to fishing-related businesses or generic ones like Amazon/Visa
- Costs
 - Will guides be willing to pay for voluntary training opportunities? In the Texas fishing guide survey, 30 percent said yes, 37 percent said maybe and 33 percent said no. If there is a need to charge a participation fee, it needs to be relatively low to make it accessible to everyone.
 - In the case of in-person training, are there opportunities to cover travel fees for participants? Transportation? Lodging? Per diem? Childcare?
- Certifications
 - Captains/guides seem to strongly prefer programs that offer some type of certificate or other recognition that can help them better market themselves and stand out from the competition
 - Suggestions include a decal for their boat/windshield and branding for their website for marketing purposes
 - QR Code/logo with resources.

6. Existing Resources

- Guide to Fishermen Training Programs
http://extension.msstate.edu/sites/default/files/publications/publications/P3527_web.pdf
- Texas: No formal program, but has produced educational best practices guides, including Angler Ethics and Etiquette, a Sustainable Fishing and Environmental Stewardship Checklist for Recreational Anglers and a Fishing Guide 101 guide.

- Sustainable Fishing and Environmental Stewardship Checklist for Recreational Anglers:
https://drive.google.com/file/d/1zN0VbZiccNX5iJhZMk6wU9Wf25_KQzBp/view
- Angler Ethics and Etiquette Guide: <https://drive.google.com/file/d/1-txi-Ga-O1SZEjSkaj2nDvdBNKZPYtVy/view>
- Fishing Guide 101: In design stages
- Louisiana: No free or state-provided training
- Mississippi-Alabama:
 - FISHERS program - <http://coastal.msstate.edu/fisheries-fishes>
- Florida:
 - Florida Friendly Fishing Guide Program: www.flseagrant.org/florida-friendly-fishing-guide-certification/
 - Florida Friendly Angler Program: <https://ifas-seagrant.catalog.instructure.com/courses/florida-friendly-angler>
- Marketing Planning
 - Creating a Marketing Plan for your Business (with templates)
www.indeed.com/hire/c/info/creating-a-marketing-plan#4
 - A Step-By-Step Guide to Your 2022 Marketing Planning
www.statsocial.com/2022-marketing-planning-guide
 - What is a Marketing Plan and How to Write One
<https://blog.hubspot.com/marketing/marketing-plan-examples>
- Business planning
 - Fish Biz <https://fishbizplan.org/>
 - Ready www.ready.gov; www.ready.gov/business
 - Ready Business will assist businesses in developing a preparedness program by providing tools to create a plan that addresses the impact of many hazards. This website and its tools utilize an “all hazards approach.”

7. Partners

- Sea Grant’s role:
 - Outreach to industry members
 - Develop incentives and recognition (branding/marketing etc.)
 - Coordinate training and develop training materials like web-based modules, presentations and printed materials (fact sheets, brochures, etc.)
 - Recruit partners
- Partners’ roles: Involved through guest presentations or additional resources for more technical topics, for example:
 - Business planning guidance
 - Training in safety, navigation, maintenance
 - Guest speakers on fisheries management/regulations (federal and state agencies)
 - Agencies involved in disaster planning and recovery (FEMA, state agencies, etc.)

- Networking and potential career opportunities

8. *Needed Resources*

- Internal resources to Sea Grant and partners:
 - Time and funding to set up new training programs
 - Connections to stakeholders throughout the Gulf to inform the sector about opportunities and recruit participants
 - Personnel to develop programming (fisheries and admin/support staff)
- External to the industries (for owners, captains and crew):
 - Time away from fishing to participate in training
 - An understanding of why training is needed/beneficial to them, clients, sector as a whole
 - Incentives to bolster participation
 - Ambassadors to lead the charge and recruit new participants
 - Resources that clearly explain requirements, recommendations and best practices
 - Personnel (Sea Grant or partners) to assist when needed (e.g., to explain licensing requirements, point them in the right direction for insurance policies, provide business planning guidance, etc.)

Mackerel (Spanish and King) (Florida Only)

1. *Background*

- In 2021, the Florida Fish and Wildlife Conservation Commission reported 7,511,122 pounds landed (value of \$14,334,211)
-

2. *Needs Assessment and Audiences*

- Boat owners and captains:
 - Worried about fish prices given by the wholesalers
 - Workers are hard to find, and the reputation of commercial fishing doesn't aid in recruitment
 - Hiring is done mostly by word of mouth
 - Competitive hiring benefits consist of better pay
 - Fuel prices are high and fish prices do not always cover costs
 - The top barriers to entry listed were the cost of living, stability of work and commercial fishing reputation

3. *Training Needs/Curriculum Outline*

- Boat owner training needs:
 - Required training in
 - Boat repair (most improvement needed)
 - Business planning
- Boat captain training needs

- Boat repair (most improvement needed)
- Business planning

4. *Formats*

- Reactions to all formats were positive, but in-person was favored over an apprenticeship and online training

5. *Recognition of Training*

- Majority of participants wanted a printed training certification valid for two years

6. *Existing Resources*

- Indication of training available from existing boat captains. Otherwise, train with your own resources

7. *Partners*

- The Florida Fish and Wildlife Commission was suggested to handle trainings

8. *Needed Resources*

Mullet (Florida Only)

1. *Background*

- Mullet is sold as a food fish, including its roe. Unfortunately, landings have been on the decline in Florida. In 2021, the Florida Fish and Wildlife Conservation Commission reported 4,660,580 pounds landed (value of \$3,846,621)
- Florida passed the net ban in 1994, which changed the fishery

2. *Needs Assessment and Audiences*

- Boat captains, boat owners, wholesalers and retailers responded to survey:
 - The work for new hires is too difficult and oftentimes they don't show back up for a second day
 - Overregulation has caused some older fishermen to give up on the industry
 - Mullet faces increased risk from imported fish
 - Perks given to the workers are few and far between due to rising costs and lack of job stability
 - Access to drug-free workers is rare
 - Lack of benefits has led to many not wanting to participate in a grueling industry
 - Mullet prices are too low to make a good profit
 - Poaching by gill netters has reduced catches especially in Tampa Bay area
 - Competition with foreign goods is reducing prices
 - Government regulation on both cases could help these fishermen

3. Training Needs/ Curriculum Outline

- Boat owner training needs:
 - Boat repair
 - Business planning
 - Rules and regulations
 - Gear repair (needs most improvement)
 - Navigation
- Retailer training needs
 - Business planning
 - Fish species identification
 - Seafood safety (most important and most improvement needed)
 - Rules and regulations (needs improvement)
 - Industry etiquette
 - Gear repair and handling
- Wholesaler training needs
 - Business planning
 - Fish species identification (needs improvement)
 - Seafood safety (most important and most improvement needed)
 - Rules and regulations
 - Industry etiquette
- Boat captain training needs
 - All trainings were deemed mostly adequate, however, the most need for improvement was in the field of boat repair
 - Boating safety was rated as the most important training

4. Formats

- Apprenticeships and in-person trainings rated highest
 - In-person trainings was the most popular
 - Open to the idea of an apprenticeship, but not through a college or internship program

5. Recognition of Training

- Most preferred a certification period of five years with a printed certificate

6. Existing Resources

- No training resources were listed in the survey

7. Partners

- The Florida Fish and Wildlife Commission was most suggested for being responsible for industry training, followed by Florida Department of Agriculture and Consumer Services
- It was suggested that these apprenticeships should follow an internship or a college program

8. Needed Resources

- Government overregulation is too strict on the fishermen, stifling them
- Mandatory state-sponsored drug tests

Oyster *(Includes oysters harvested from private leases)*

1. Background

- General
 - Globally, 85 percent of all oyster reef habitats are functionally extinct (Beck et al. 2011)
 - Oyster reefs provide the following valuable ecosystem services: prey fish/invertebrate refuge and habitat, increased habitat complexity, can control phytoplankton populations and mitigate eutrophication; shallow subtidal reefs can act as carbon sinks and provides protection to shoreline from erosion
 - Eastern oysters (*Crassostrea virginica*) are the main species found in Canada and throughout the Yucatan Peninsula
 - Naturally found in shallow, semi-enclosed estuaries, they thrive in salinity of 10 to 22 ppt but can tolerate a larger salinity range for a short period of time
 - Oysters have been heavily exploited since the 1800s in the U.S. By 2004, the population reached 1 percent of its historic numbers
- Gulf of Mexico
 - The Gulf population of oysters was not as heavily exploited in the beginning. In 1950 oysters from the GOM accounted for 20 percent of total U.S. harvest. By 2008, 89 percent of the eastern oyster harvest was composed of oysters from the GOM
 - Commercial tonging and dredging make up ~90 percent of GOM oysters harvested
 - The Gulf produces 22 million pounds of oysters per year. The majority of that coming from Texas and Louisiana
 - Production percentages of GOM harvest from GSMFC from 2000 – 2010
 - Louisiana – 50 percent
 - Texas – 21 percent
 - Florida – 19 percent
 - Mississippi – 7 percent
 - Alabama – 3 percent
- State specific background
 - Texas
 - Annually, the oyster fishery is worth about \$20 million from public reefs and private leases
 - Oyster resources have declined significantly since early 2000s, primarily due to storm damage and flooding events. Hurricane Ike- damaged

- more than 80 percent of Galveston Bay reefs (the primary oyster harvest area in Texas) due to sediment burying reefs
 - All shellfish in Texas waters must be harvested from approved or conditionally approved areas as designated on the harvesting area maps
- Louisiana
 - Louisiana’s traditional oyster industry is a volume-based fishery with the vast majority produced from traditional private leases, 98 percent in 2019
 - Since 2000, this traditional production has annually averaged 11,553,068 pounds of oyster meat, contributing 44 percent of the United States’ supply
- Mississippi
 - Mississippi has limited areas that are considered “conditionally approved” for oyster harvest
 - Most recently, all harvest has been closed as the openings of the Bonnet Carre’ Spillway caused freshwater to be diverted through Lake Pontchartrain and then the western Mississippi Sound
 - MDMR is heading up ongoing monitoring and restoration efforts
- Alabama
 - Waters south of the mouth of East Fowl River are conditionally approved harvest areas. The most productive areas are found on the western portion of Mobile Bay and into the eastern portion of Mississippi Sound, commonly referred to as Cedar Point
 - Harvest has slowly decreased over time as substrate availability has been reduced and larval retention was affected after Hurricane Katrina (Park et al. 2014)
 - Multiple reefs have been restored by both the state and the University of South Alabama
 - Productive harvest was seen in the fall of 2021 for the first time in years. Harvest was mainly located in Heron Bay and around the Cedar Point areas
- Florida
 - Ninety percent of Florida’s oysters used to be harvested in Apalachicola Bay
 - Apalachicola Bay has had recent controversy because of a lawsuit by the State of Florida vs. the State of Georgia, but it dismissed by U.S. Supreme Court
 - In 2020, Apalachicola Bay was shut down (through 2025) for oyster harvesting, putting many fishermen out of business
 - In 2021, Florida Fish and Wildlife Conservation Commission reported 293,908 pounds harvested (value of \$1,552,340)

2. Needs Assessment

- The main areas of need based on the Sea Grant survey are professionalism and leadership in the existing workforce; leadership in the existing workforce, as well as training for deckhands, crew and workers, followed by new captains
- Florida survey respondents were boat owners and crew members:
 - Oyster fishermen feel as if the government hasn't done enough to assist them, either through permits or through monetary assistance
 - Fishermen say that they see the industry dying right in front of them
 - Fishermen rate the biggest obstacle to workforce recruitment is job instability
 - Fishermen are on their own when it comes to recruitment. If not solely sufficient, they rely on other fishermen in community
 - Hard for the fishermen to provide good benefits other than vaguely competitive pay, and the referenced intrinsic value of good pay and working on the sea
 - Oyster populations are dying out due to the improper culling of oysters.

3. Training Needs/Curriculum Outline

- Overall training needs
 - High priority
 - Product handling
 - Business planning
 - Permitting/legal regulations
 - Marketing
 - Safety
 - Gear use
 - Low priority
 - Maintenance/repair
 - Electronics
 - Navigation
- Florida boat owner identified training needs:
 - Oyster operators were concerned with training all around. Areas deemed most in need of improvement were:
 - Boat repair
 - Navigation
 - Business planning
 - Rules and regulations
 - Gear repair
 - Industry etiquette
 - Of these, the most important were industry etiquette and rules and regulations
- Florida crew member identified training needs:
 - Boat repair training (reported as unavailable and needed)
 - Knot-tying training (needed improvement)

4. Formats

- Hybrid or In-person
- In Florida, the majority were in favor of in-person training. There was a 50/50 split between in favor/against apprenticeships. Many were strongly against an online training option

5. Recognition of Training

- Certificate of completion
- In Florida, the overwhelming majority supported a printed certification with two-year recertification

6. Existing Resources

- Seafood safety
 - Alabama Department of Public Health - Seafood and Shellfish Safety www.alabamapublichealth.gov/foodsafety/seafood-and-shellfish.html
 - Alabama Department of Environmental Management <https://adem.alabama.gov/default.cnt>
 - Mississippi Department of Marine Resources Shellfish Bureau <https://dmr.ms.gov/shellfish/>
 - Mississippi Department of Environmental Quality www.mdeq.ms.gov/
 - Louisiana Molluscan Shellfish Program <https://ldh.la.gov/page/629>
 - Texas Shellfish Harvesting www.dshs.texas.gov/seafood/shellfish-harvest-maps.aspx
 - Interstate Shellfish Sanitation Conference (ISSC) www.issc.org/
 - National Shellfish Sanitation Program (NSSP) www.fda.gov/food/federalstate-food-programs/national-shellfish-sanitation-program-nssp
- Marketing planning
 - Creating a Marketing Plan for your Business (with templates) www.indeed.com/hire/c/info/creating-a-marketing-plan#4
 - A Step-By-Step Guide to Your 2022 Marketing Planning www.stat-social.com/2022-marketing-planning-guide
 - What is a Marketing Plan and How to Write One [+Examples] <https://blog.hubspot.com/marketing/marketing-plan-examples>
- Business planning
 - Fish Biz <https://fishbizplan.org/>
 - Ready www.ready.gov, www.ready.gov/business
 - Ready Business will assist businesses in developing a preparedness program by providing tools to create a plan that addresses the impact of many hazards. This website and its tools utilize an “all hazards approach.”

7. Partners

- In Florida, many participants requested that the Florida Department of Agriculture and Consumer Services be responsible, or partially responsible, for training new hires

- Oyster industry focused entities:
 - Texas Oyster Industry Association
 - Texas Oyster Association
 - Louisiana Oyster Task Force
 - Louisiana Oyster Dealers and Growers Association
 - Gulf States Marine Fisheries Molluscan Shellfish Subcommittee
 - Mississippi Commercial Fishermen United (MSCFU)

8. Needed Resources

- Apprenticeships may help funnel people into this industry
- Some participants complained about the lack of stability, and that government assistance could help with the instability of the profession

Reef Fish

1. Background

- The Gulf of Mexico reef fish complex is comprised of 31 species of snappers, jacks, tilefishes, groupers, hogfish and triggerfish. These species are federally managed by the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico
 - Amberjack are overfished
 - Gray snapper and lane snapper are experiencing overfishing
 - Red snapper and gray triggerfish are currently in rebuilding plans
- Several species (particularly deep-water groupers) are data deficient
- Management, sustainability and balancing competing user groups/stakeholder interests are high priorities for this fishery.
 - Reef fish in the Gulf are both commercially and recreationally important, leading to high use and user conflicts.
 - Several reef fish species are either overfished (amberjack), or overfishing (gray snapper and lane snapper), or are in a rebuilding plan (red snapper and gray triggerfish) or are considered data deficient, particularly deep-water groupers and tilefish)
 - Several species are managed through Individual Fishing Quota (IFQ) programs (red snapper, groupers and tilefish), while others are managed through seasonal fishery quotas, bag limits and other effort limits.
 - The federal reef fish fishery is limited entry with approximately 500 federally permitted vessels in the fleet. Most trips are vertical longline (79 percent) with the second most common being bottom longline (10 percent) bottom longline
 - Several gear types (vertical longline, or bandit reels, and bottom longlines, as well as standard hook and line and spearfishing) are associated with the reef fish fishery depending on target species.
- The total revenue of GOM Reef Fish Fishery in 2016 was more than \$62 million.
- [Commercial Revenue of Top 5 Species in 2016:](#)

Revenue for Top Five Species

Red Snapper	\$26,617,136
Red Grouper	\$16,727,197
Gag Grouper	\$4,485,711
Vermilion Snapper	\$4,107,852
Yellowedge Grouper	\$3,270,940

By state: (currently Florida only)

- Florida's main commercial reef fish species include amberjack, grouper and snapper
 - All three of these fish are protected under the Snapper-Grouper-Fishery Management Plan
 - Reef fish in the Gulf have been dramatically impacted by habitat loss, overfishing and oil spill disasters. These consistent dangers to the ecosystem have spurred high levels of regulation
 - As of 2020, amberjack is overfished in the Gulf of Mexico
 - Stock of amberjack has been rebuilding since 2003 after regulations were put into place
 - For 2021, the Florida Fish and Wildlife Conservation Commission reported 544,387 pounds landed (valued at \$1,091,587)
 - Grouper includes many different species such as red, nassau, black, gag, goliath and gulf
 - All grouper, except red and black, are overfished in the Gulf of Mexico
 - For 2021, the Florida Fish and Wildlife Conservation Commission reported 5,309,112 pounds landed (valued at \$24,867,970)
 - Snapper includes many species, but the most popular is red snapper
 - A rebuilding plan hopes to have red snapper populations back up to the target level by 2032 (NOAA, 2022)
 - For 2021, the Florida Fish and Wildlife Conservation Commission reported 5,953,214 pounds landed (value of \$23,667,568)

2. Needs Assessment and Audiences

- From Florida industry surveys, Louisiana Graying of the Fleet Panel and the NFWF Report on Gulf of Mexico Young Fishermen Program Strategic Planning Workshop:
 - Boat captains, boat owners, wholesalers and retailers:
 - Fishermen are struggling with the rising cost of living
 - It is difficult for boats to find workers. Drug abuse is a common problem in the industry
 - Competition between fishermen is not healthy
 - Perks given to the workers are few and far between due to rising costs and job instability
 - Almost all hiring is done through word of mouth
 - High cost of entry (quota shared and limited entry permits) reduce new players in the fishery

3. Training Needs/Curriculum Outline

- Boat owner training needs:
 - Indicated their crewmates required training in:
 - Boat repair
 - Rules and regulations
 - Gear repair
 - Industry etiquette
 - Species identification
 - Business planning
 - Safety
 - Product handling
- Retailer training needs:
 - Business planning
 - Fish species identification
 - Seafood safety (most important)
 - Rules and regulations (most improvement needed)
- Wholesaler training needs:
 - Business planning
 - Industry etiquette
 - Rules and regulations (most improvement needed)
 - Seafood safety (most important)
- Boat captain training needs:
 - Business planning (most needed)
 - Financial planning and services (options/opportunities for investment in quota)
 - Boat safety (most important)

4. Formats

- In-person training is favored, followed by apprenticeships
 - Open to the idea of an apprenticeship through a college or internship program

5. Recognition of Training

- Printed certificate with most favoring no recertification.

6. Existing Resources

- None reported

7. Partners

- The Fish and Wildlife Commission was the most suggested for being responsible for industry training
- Gulf of Mexico Reef Fish Shareholders Alliance

8. Needed Resources

- Instability in the seasons leads to some fishermen only working for 12 weeks out of the year
 - Allowance of more freedom through permits could alleviate this
- Access to drug tests is scarce due to lack of funding
 - Drug addicts commonly try to get jobs on these boats due to pay in cash
- Cost to enter the sector have increased due to rising prices and many complain about the costly nature of obtaining permits
 - Permit price reduction could help lower entry barriers for upstart commercial fishermen

Shrimp

1. Background

- Shrimp Stocks
 - Brown, white and pink shrimp make up most of the shrimp harvested in the southeast United States
 - Brown and white shrimp are caught throughout the Gulf of Mexico, mainly off the coast of Texas and Louisiana. Pink shrimp are generally found off the west coast of Florida
 - In 2021, 71 million pounds of brown shrimp (worth \$164 million), 112 million pounds of white shrimp (worth \$274 million) and 12.3 million pounds of pink shrimp (worth \$37 million) were harvested
 - Annual harvest of all three species varies from year to year, mainly as a result of environmental conditions
 - All three Gulf of Mexico stocks are not considered overfished or are experiencing overfishing
- Shrimp Fleets
 - There are two distinct fleets in the shrimp fishery: the federal fleet and inshore/state-level fleet
 - Boats in the federal fleet are typically larger, stay at sea for an extended period of time (30-45 days) and fish in federal waters
 - Boats in the inshore/state-level fleet are smaller and shrimp within state waters
 - Some boats will fish in both federal and state waters
- Additionally, there are bait shrimp operations that focus solely on providing live/dead shrimp for others to use as bait
- “Aging of the Fleet” has been deemed an issue in the shrimp industry. It refers to the fact that younger people are not entering the industry, causing the fleet’s average age to increase. This is also occurring with boats. Due to recent Coast Guard regulations for building new vessels, harvesters say it costs too much to build a new boat. Instead, industry members are choosing to repair old boats

- Current status
 - All three Gulf of Mexico stocks are not considered overfished or are experiencing overfishing
 - Gulf shrimp is largely a domestic product. Very little, if any, is exported. However, some does go to U.S. military bases in other countries
 - The inclusion of shrimp into the USDA food distribution program (started in 2020) has seen a considerable amount of domestic shrimp purchased by the government for programs such as schools and food banks
 - Operational costs have increased considerably with the rising cost of diesel – so much so that it is cheaper to stay at the dock
 - Like many other fishing industries, there is a massive shortage in labor – specifically crew/deckhand labor. The H2B program (seasonal migrant workers) is considered by the industry as more reliable than local workers and crew, and typically better. Texas utilizes H2B visa workers on vessels, whereas other states only utilize H2B workers in dock and processing facilities.

2. Needs Assessment Findings and Audiences (crew vs. captains)

- The majority of respondents to the Florida survey were captains, boat owners, wholesalers and retailers. Many people who took the survey were attracted by the possibility of extra help with workers, leading to a more managerial response
- Additional information came from the Louisiana Fisheries Forward Summit (March 6, 2020) ‘Greying of the Fleet’ Panel, and the Gulf Young Fishermen Program Steering Committee Strategic Planning Workshop report

3. Training Needs/Curriculum Outline

- Boat owner Issues of concern
 - Trainings required for boat repair were described as extremely important but lacking in availability
 - Business planning was also ranked as important but found lacking in availability
 - Florida surveys displayed a need for improved training to deal with rules and regulations
 - Improvement is needed in gear training and product handling
 - TED/BRD training
 - Fuel saving techniques
 - Brine tank use
 - Heading on vessel
 - Species identification - invasive (tiger shrimp) and bycatch prohibited species
 - Product handling - freshness, black spot treatment (bisulfate, Ever Fresh), freezing
- Basic crew training - not all positions are filled - crew is especially hard to find
- There are two schools of thought when it comes to recruitment bonuses
 - Share catch and resources with the crew

- Offer competitive pay
- Emphasis on intrapersonal reward for doing a good job
- Retailer issues of concern
 - Emphasis on a lack of knowledge of industry etiquette and business planning
- Wholesaler/processor issues of concern
 - For processors, there is also a lack of workers, basic processing training and training in new technology options (graders, peelers, etc.)
 - For wholesalers, the surveys rated all areas of training as needing improvement
- Boat captain issues of concern
 - Captain training - the captain was emphasized as being the most crucial component and many found the training levels to be adequate
 - Two areas of concern regarding captains were boat repair and business planning
 - Safety
 - Regulations/rules/lobbying
 - Net repair - this was emphasized by many - with increase in shark damage to gear and loss of netmakers (also due to aging out and lack of training)
- Crewmember issues of concern
 - Areas that stood out in need of improvement were industry etiquette and boat and gear repair
 - Navigation and chart reading for captain and crew (in case captain is incapacitated)
 - Net repair - this was emphasized by many - with increase in shark damage to gear and loss of netmakers (also due to aging out and lack of training)
 - Basic crew training was deemed very important
 - Boat maintenance, net repair, species identification (particularly bycatch species - prohibited), product handling

4. *Formats*

- In person
- Apprenticeship/sponsorship
- Survey recipients were against an online option and were supportive of both in-person and apprenticeship training offerings

5. *Recognition of Training*

- All Florida respondents in the shrimping sector preferred a printed certificate
- The respondents were torn between potential recertification timeframe:
 - The most common answer was every two years
 - Second most common answer was no recertification needed
- People are more likely to get hired if they have some sort of certificate of training/hours documented

6. Existing Resources

- Alaska Marine Safety Education Association ([AMSEA](#)) - drill conductor training
- Red Cross - CPR and first aid training
- Sea Grant programs
 - Louisiana Fisheries Forward [website](#)
 - NOAA – TED/BRD regulations
 - USCG – safety regulations
- Marketing planning
 - Creating a Marketing Plan for your Business (with templates) www.indeed.com/hire/c/info/creating-a-marketing-plan#4
 - A Step-By-Step Guide to Your 2022 Marketing Planning www.statsocial.com/2022-marketing-planning-guide
 - What is a Marketing Plan and How to Write One [+Examples] <https://blog.hubspot.com/marketing/marketing-plan-examples>
- Business planning
 - Fish Biz <https://fishbizplan.org/>
 - Ready www.ready.gov, www.ready.gov/business
 - Ready Business will assist businesses in developing a preparedness program by providing tools to create a plan that addresses the impact of many hazards. This website and its tools utilize an “all hazards approach.”
- Industry-focused organizations
 - Southern Shrimp Alliance (SSA)
 - Texas Shrimp Association (TSA)
 - Port Arthur Area Shrimpers Association (PASSA)
 - Louisiana Shrimp Association (LSA)
 - American Shrimp Processors Association (ASPA)
 - Mississippi Commercial Fishermen United (MSCFU)
 - Southeastern Fisheries Association (SFA)
 - Organized Seafood of Alabama
 - SOS
 - Louisiana Shrimp Task Force (LSTF)

7. Partners

- Industry-Focused Organizations (see list above in *Resources*)
- AMSEA
- Those surveyed in Florida want government aid through training and recruitment programs

8. Needed Resources

- Fisherman are struggling to compete with foreign shrimp markets due to regulation, the need for training and engagement in trade issues

- Crew- H2B program and local crew: Help is incredibly hard to find with many of the crews not being able to afford drug testing
- Fishery disaster resources: Lack of help/assistance after a natural disaster
- Insurance issues: Jones Act education, vessel insurance options (cost issues)
- Loss of cold storage facilities and land-based facilities
- Permit holders said that there were many different barriers to entry
 - Limited entry- hard to get licenses
 - Difficulties with stability of work
 - Lack of apprenticeship or training opportunities
 - Lacking infrastructure on land for working waterfronts

Spiny Lobster (Florida Only)

1. Background

- Ninety percent of the spiny lobster harvest comes from the Florida Keys
- Florida has introduced protected no-hunting zones to help maintain the population (Florida, 2010)
- There are regulations on egg-bearing lobsters to also maintain the population
- Spiny lobster is the second most profitable fishery in Florida behind shrimp, averaging more than \$40 million annually (Florida, 2022a). For 2021, the Florida Fish and Wildlife Conservation Commission reports 4,700,564 pounds landed (value of \$42,195,856)

2. Needs Assessment and Audiences

- Boat owners, captains and crew responded to survey:
 - The cost of living, lack of work ethic and regulations were the top barriers to entry listed by spiny lobster fishermen
 - Housing for spiny lobster fishermen was one of the most pressing issues. There is a high cost of living in the Florida Keys
 - All training provided was indicated to have come from individuals
 - Spiny lobster hiring is done mostly by word of mouth or within the family

3. Training Needs/Curriculum Outline

- Crew did not show an outstanding need for any training. Said all current training available was adequate for this fishery
- Boat owner training needs:
 - Boat repair (most improvements needed)
 - Business planning (this is not available and needed)
 - Species identification
- Boat captain training needs:
 - Boat repair
 - Boat safety
 - Gear repair and handling (most in need of improvement)
 - Fish species identification

- Industry etiquette

4. *Formats*

- Prefer in-person and apprenticeships. Online option neutral

5. *Recognition of Training*

- Printed certificate with no recertification requirement

6. *Existing Resources*

- Training resources came from individual fishermen who would train the hired crew to the specification of their operations

7. *Partners*

- The Fish and Wildlife Commission was the most suggested for being responsible for industry training; however, others did not want government involvement
- The second most suggested partnership was Florida Sea Grant

8. *Needed Resources*

- Housing for spiny lobster fishermen was one of the most pressing issues, perhaps due to housing costs of the Florida Keys
 - Giving the fishermen subsidies to help afford housing in high tourist areas could be beneficial to the fishery
- Funded training could promote crew awareness and availability

Sponge (Florida Only)

1. *Background*

- Florida sponge harvesting has declined for the last 50 years, and harvests are 10 times lower than historical harvests due to replacement with synthetic sponge
- Fishing for sponges is prohibited in the Everglades and Biscayne National Parks and recreational diving in the Florida Keys
- Regulations on cut-to-harvest sponges were put in place to help regenerate harvested sponges (Stevely and Sweat, 2008)
- In 2021, the Florida Fish and Wildlife Conservation Commission reported 286,444 pounds of sponge pieces harvested (value of \$878,245)

2. *Needs Assessment and Audiences*

- Boat owners responded to the survey:
 - Hiring is done mostly by word of mouth
 - Some sponge divers preferred to work alone
 - The cost of living, cost to enter and regulations were the top barriers to entry listed by sponge divers
 - There were no competitive benefits given to sponge divers

3. Training Needs/Curriculum Outline

- Boat owner training needs:
 - Boat repair (most improvement needed)
 - Species identification

4. Formats

- Reactions to all formats were positive, but an apprenticeship was favored over online and in-person training

5. Recognition of Training

- Majority of participants wanted a printed training certification. No agreement on recertification time

6. Existing Resources

- There were no resources indicated for trainings

7. Partners

- Industry groups were the most suggested for being responsible for industry training
 - Apprenticeships were not suggested for partners, contrary to approval for training method

8. Needed Resources

- None reported

Stone Crab

1. Background

- Importance and value fishery/sector
 - Florida is responsible for 99 percent of all stone crab landings in the United States
 - Two most valuable dockside landed in 2020 (Florida - \$31M)
 - Stone crabs are unique in that only their claws are harvested, and the animal is then released to regrow their claws
 - Louisiana/Mississippi/Alabama stone crab take is small (unknown?)
 - Louisiana 224 pounds in 2019. None in Mississippi/Alabama
- Current status of fishery/sector
 - It is difficult to obtain population data for stone crabs because only the claws are harvested
 - No fisheries-dependent monitoring mortality

- Sixty percent mortality if both claws harvested, 40 percent mortality if one claw, 12 percent mortality if no claws (Gandy and Crowley). Check state regulations: Some states allow two claw harvests; some only allow one
- The FWC has recently released a larger size limit on stone crab claws to help combat potential overfishing
 - But has not been overfished. Preventative measures to combat overfishing: reduction program for traps, installation of cull rings, regulations, etc.
- Commercial stone crabbers are experiencing different stressors (i.e., issues with shrimpers, boaters not knowing what buoys look like, living expenses, competition with recreational crabbers, weather, water quality and temperature, octopus, market prices, other fisheries, difficulties to get supplies for traps and buoys)
- Regional price differences (i.e., south Florida premium) and seasonal and yearly differences in prices

2. Needs Assessment Findings and Audiences (crew vs. captains)

- The main respondents for the stone crab sector were boat owners, captains, retailers and crew
 - Stone crab had the second largest number of respondents at 89 survey participants out of a total of 437
- Stone crabbers were upset at overregulation and the inability to pull in the same numbers of crabs as in previous years
 - Many crabbers are frustrated with the regulation of Individual Fishing Quotas
- Given the increased cost to live, they are unable to find help that is sober and willing to work a hard job for potentially unstable pay
- Recruitment is hard and done mostly through word of mouth
 - Difficult to recruit due to commercial fishing being the enemy
 - Larger vessels cannot find crew with an educated background
- Smaller vessels rely on their own small family to make it work

3. Training Needs/Curriculum Outline

- Crew training needs
 - Trainings of concern
 - Boat repair
 - Rules and regulations (most in need of improvement)
 - Proper claw removal (needed)
 - Biology, environmental conditions and movement of stone crabs (needed and interested)
 - Best management practices for harvesting and how it could hurt the fishery if not done correctly
- The following trainings were deemed adequate
 - Boating safety
 - Business planning

- Species identification
- Gear repair and handling
- Knot tying
- Industry etiquette
- Navigation
- Seafood safety (most important)
- Boat owner training needs
 - Boat owners for stone crab vessels were concerned with training in:
 - Gear handling
 - Rules and regulations (most important and in need of improvement)
 - Boat repair
 - Industry etiquette
 - Biology, environmental conditions and movement of stone crabs (needed and interested)
 - Best management practices for harvesting and how it could hurt the fishery if not done correctly
- The following trainings were deemed adequate
 - Boating safety
 - Business planning
 - Species identification
 - Gear repair and handling
 - Knot tying
 - Navigation
 - Seafood safety
- Retailer training needs
 - Trainings of concern
 - Industry etiquette (most improvement needed)
 - Business planning
 - Fish species identification (most important)
 - HACCP is needed
- Captain training needs
 - Captains were split almost 50/50 when it came to improvements needed in training, though the greatest need was in the areas of:
 - Boat repair
 - Industry etiquette
 - Rules and regulations (most improvement needed)
 - Biology, environmental conditions and movement of stone crabs (needed and interested)
 - Best management practices for harvesting and how it could hurt the fishery if not done correctly
- All trainings were rated as very important
- The following areas were deemed as adequate training:
 - Gear repair and handling
 - Knot tying

- Navigation

4. *Formats*

- Stone crabbers were neutral to the idea of online training but strongly recommended there to be an in-person or apprenticeship format for training

5. *Recognition of Training*

- Overwhelmingly supported a printed certificate
- Majority believed that there was no need for recertification, followed by recertification every two years

6. *Existing Resources*

- None mentioned outside of “We train our own help”
- HACCP

7. *Partners*

- Showed a desire for FWC to provide training
 - Some fishermen showed skepticism of government aid and were not open to the idea
- Open to partnership with an apprenticeship program with schools
- Florida Stone Crabbers Association (<https://stonecrabbers.com/>)

8. *Needed Resources*

- Difficult to attract people to the job with many not being able to provide competitive benefits
 - Manual labor is not as attractive
- Cash-heavy job attracts drug addicts
 - Providing drug tests to fishing piers would help existing fishermen find quality crew and potentially help change perspectives on the industry
- Many participants believe that the increased cost of living is causing fewer people to enter the fishery
 - Potential government subsidy could help lower the overhead costs and thus decrease barriers to entry for the fishery
- Enforcement is needed (FDACS, FWC)
- Marketing from companies regarding sustainability
 - Monterey Bay marked stone crab claws as unsustainable and Whole Foods dropped
- Priced out of the area as working waterfront
 - Preserved in future under cultural heritage

Tropical Fish (Florida Only)

1. *Background*

- Tropical fish are not harvested as a food source but instead sold into the ornamental pet trade
- Given the list of prohibited species, tropical fish harvesting has been supplemented by employing tropical aquaculture
- Harvesters of tropical fish must have a Saltwater Products License and are required to land the fish alive

2. Needs Assessment and Audiences

- Owners and boat captains answered survey:
 - Tropical fishermen cannot find skilled help able to harvest the tropical fish
 - Finding workers is one of the biggest challenges facing the fishery right now. The cost of living and work ethic are top barriers. Competitive pay is not high enough compared to other less risky jobs
 - Hiring is done mostly by word of mouth
 - Crew are scarce and not usually able to identify tropical species
 - Given training, these crew could perform better and become more invested

3. Training Needs/Curriculum Outline

- Owner training needs:
 - Business planning
- Boat captain training needs:
 - Navigation
 - Boating safety (most important)
 - Business planning (most improvement needed)
 - Industry etiquette
 - Rules and regulations

4. Formats

- Reactions to all formats were positive, but an apprenticeship was slightly favored over online and in person trainings

5. Recognition of Training

- Majority of participants wanted a printed training certification
- Many preferred trainings to be permanent, not require recertification, or have certification last for five years.

6. Existing Resources

7. Partners

- The Fish and Wildlife Commission was most suggested for being responsible for industry training
- The second most suggested partnership was industry groups

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8. *Needed Resources*

- Drugs are a problem for tropical fishermen and subsidized drug tests could help

Aquaculture

Clam (Florida Only)

1. *Background*

- Clam farmers lease from state and plant clam seeds. Clams are harvested year-round
- Clams farming doesn't have the same negative impacts on the local ecosystem as other farms do, leading to many clean sustainable farming jobs (Fried, 2022b)
- Hiring is done mostly by word of mouth and dock hopping
 - The only hiring benefits are offering competitive pay

2. *Needs Assessment and Audiences*

- Boat owners and processors responded to the survey; however, a very few

3. *Training Needs/Curriculum Outline*

- Boat owner training needs:
 - Boat repair (most improvement needed)
 - Business planning
 - Gear repair and handling
 - Industry etiquette
- Processor training needs:
 - Boat repair
 - Business planning (most important)
 - Boating safety (most improvement needed)
 - Rules and regulations
 - Gear repair and handling
 - Navigation

4. *Formats*

- Reactions to all formats were positive, but in person and apprenticeship were favored over online training

5. *Recognition of Training*

- Majority of participants wanted a training certification
- Many preferred trainings to be permanent and not require recertification.

6. *Existing Resources*

- No training resources were identified.

7. Partners

- The Florida Department of Agriculture and Consumer Services was the most recommended partner for training

8. Needed Resources

- The cost of living and regulations were the top barriers to entry listed by clambers

Crawfish

1. Background

- Production
 - In conjunction with rice culture, either on a rotational basis with a rice crop or in the same region where rice is grown
 - Relatively flat land and soil with enough clay content to hold water are required
 - Louisiana is the largest producer of farm-raised crawfish. USDA-FSA reported 284,000 acres in Louisiana for the 2021 season. Total farm production in 2020 was approximately 170 million pounds with a farm gate value of \$225 million
 - Southeast Texas has an estimated 10,000 acres producing, averaging around 750 pounds per acre, totaling around 6.75 million to 7.2 million pounds of crawfish. The majority (80 percent) of the ponds in Texas are rotational crops that coincide with second rice crops
 - Several other states have attempted production in small ponds with limited success. They include Mississippi, Arkansas, Missouri and North Carolina
 - Critical steps in production include:
 - Initial stocking of new ponds in May and June
 - Vegetation management during the summer
 - Weather factors in late summer (drought or excessive rainfall)
 - Flood up in October (water quality, pumping capacity)
 - Harvesting
- Ponds
 - Can be just a few acres or large fields from 50 to 100 acres
 - Large fields are usually divided into smaller units of 10 to 30 acres to facilitate better management of water depth and water circulation
 - Water depth ranges from 12–20 inches
 - Vegetation in the pond generates the food web that supports the crawfish population. Food supply and water quality (dissolved oxygen and temperature) impact the survival, growth and ultimate production in a pond. Additionally, population density and spawning peaks during the fall determine size and total production during the season
 - Ponds are flooded in October to encourage crawfish to emerge from their burrows. This also corresponds to the peak of spawning season

- Young-of-the-year grow during the fall and winter and are large enough to be harvested in February thru May
- The pond harvest season extends into late May and June, at which time the ponds are drained and the crawfish burrow into the ground for the summer
- Harvest
 - Crawfish are harvested using wire mesh and pyramid-shaped traps
 - Farmers typically use 10 to 15 traps per acre spread across the pond
 - Workers in shallow draft, wheel driven boats empty and rebait traps two to three days per week in the winter when the catch is low due to cooler water temperatures. As the water warms in the spring, the catch increases and traps are run five to seven days per week
- White Spot Syndrome Virus (WSSV)
 - A crustacean disease that has affected shrimp and crawfish production around the world for the last 25 years
 - The virus causes significant mortality in crawfish ponds during the spring resulting in the loss of production in April and May
 - How the virus is transmitted from one pond to another is unknown. Management practices to reduce the impact of the virus are unknown
- Marketing
 - The primary market for crawfish is the sale of live crawfish to establishments that boil the crawfish on-site
 - Live crawfish are delivered as soon as possible considering the constraints of demand and transportation
 - Buyers try to avoid holding crawfish in coolers more than a day due to increasing mortality
 - The price of live crawfish starts out high during the winter when demand exceeds the supply. As production increases in the spring, the price decreases. During the spring, the catch exceeds the demand for live crawfish and the excess production must be processed either as peeled tail meat or as whole-boiled and frozen crawfish
 - Live crawfish are marketed regionally in the south within 500 miles of south Louisiana. Major markets include Houston, Dallas, New Orleans, Mississippi Gulf coast, Mobile and the Florida panhandle
 - There are a few states that do not allow the sale of live red swamp crawfish. Frozen tail meat and frozen whole-boiled crawfish are marketed nationwide

2. Industry Needs

- Labor is the biggest issue facing the industry. Without the H2A guest worker program, as much as 75 percent of the crawfish crop would go unharvested. Without the H2B program, processors could not handle the supply of crawfish in March through May and the price of crawfish would crash
- There are approximately 1,600 crawfish farmers in Louisiana. They employ an estimated 5,000 people to harvest crawfish. Seventy-two plants in Louisiana process

and ship crawfish. They require about 8,000 seasonal workers from January through June

- Many of the seasonal workers who work on the farm harvesting crawfish or in the processing plants return each year to work for the same employer. There is no need for training of the farm workers. In a short time of running traps, they develop the skill to run the boat and empty traps efficiently. Processing laborers do need some training on food safety procedures in the processing plants. Even the workers who have worked in plants before need a refresher course on procedures
- Texas farms are spread out, and it takes workers miles to move between field to field. The need for housing, and not getting fined for all the requirements it takes to have H2A workers, adds to the input costs
- The newest farmers to the industry expressed the need for a good cold-water bait. Pogies got hard to find and cost too much to use
- Farmers expressed the need for better education on water quality, what to grow and how to manage a feed crop for crawfish
- The seasoned farmers in Texas expressed the need for consumer and restaurant education
 - Many restaurants are not purging, seasoning or cooking them correctly and it is giving consumers a negative image for eating crawfish. Most farmers will sell directly to consumers, and they expressed the need to educate the public on how much to order, how to cook them, etc.

3. Training Needs/Curriculum Development

- Continue to educate producers on the Best Management Practices (BMPs) for producing crawfish. This would be primarily thru the efforts of Marine Extension agents in Louisiana and Texas
- Continue to encourage and fund crawfish research relative to the production of BMPs and White Spot Syndrome Virus
- Help farmers and processors understand the Department of Labor guest laborer program, how to apply for workers and how to comply with regulations. Sea Grant legal programs could develop the educational materials and Marine Extension agents could disseminate the information. The information may also be useful to shrimpers or other commercial fishing sectors that need seasonal labor
- Training videos for crawfish processing plant workers could be developed by Sea Grant seafood specialists. Much of the content on cleaning and sanitation would apply to all seafood processing plants
- Path to the Plate education for the public. How to buy, purge and cook crawfish in backyards and seasonal crawfish restaurants

4. Formats

- Extension
 - Educating farmers on crawfish BMPs will involve Extension demonstrating techniques during in-season farm visits, local meetings with producers,

development of short presentations either in PowerPoint or videos on specific production topics – stocking, water quality, trapping, hauling, ... It is vital that Marine Extension agents have time to be proactive with these activities and not just reactive in answering phone calls when they come. Also, short staffing is an issue with the crawfish industry in Louisiana and Texas

- Educational materials, either printed or in video format, need to be developed regarding H2A and H2B visa programs to assist farmers and processors
- Short training videos could be developed to instruct crawfish processing plant workers on several important topics, such as cleaning and sanitation, safety precautions in a plant, food safety and HACCP training. Seafood specialists in the states could develop these materials and make available online.
- Research
 - Ponds and facilities crawfish research are available at the Rice Research Station in Crowley, La. Currently the research position is vacant and needs to be filled. There is also a crawfish research facility near the LSU campus in Baton Rouge. But again, there is no researcher that is designated to do crawfish research. These positions need to be filled
 - WSSV research should involve a multi-discipline research effort. Sea Grant may be able to recruit a regional research team to address this problem
 - Texas does not currently have crawfish research centers. Efforts are made with local Sea Grant Extension agent and the AgriLife fisheries specialist

5. Recognition of Training

- Crawfish farmers do not need any recognition or training to help market their crawfish
- Processing plant workers could be given a certificate of training, but it would not be recognized or required by a processor as a condition of employment

6. Existing Resources

- Louisiana Sea Grant has one MEP agent and one aquaculture specialist who have partial responsibilities for crawfish production programming. The scope of the crawfish industry in Louisiana would certainly benefit from more extension and research resources focusing on crawfish production. Resources could be shared with producers in southeast Texas through cooperation with MEP agents
- Louisiana and other Sea Grant programs have seafood technology specialists who already teach HACCP courses and provide technical assistance to processors. Some worker training materials already exist in some states. Those resources may have to be tweaked to address specific issues with crawfish or other seafood commodities

7. Partners

- Crawfish production partners
 - Louisiana Crawfish Promotion and Research Board
 - Louisiana Farm Bureau
 - Louisiana and Texas Rice Growers Associations

- Crawfish Processing
 - Louisiana Crawfish Processors Alliance

8. Needed Resources

- Limited personnel to work directly with crawfish farmers is the most significant constraint that Sea Grant has relative to the crawfish industry. More FTEs need to be directed/dedicated toward the industry for both extension and research needs

Oyster Aquaculture *(Caged oyster aquaculture in the Gulf of Mexico)*

1. Background

- Commercial oyster aquaculture is now present in all the Gulf states. There are more than 200 farms with a harvest value of an estimated \$4 million
- Industry is very new and is growing year over year
- Oyster aquaculture allows for oysters to be harvested in times when wild oyster harvest is closed. Allows for a more consistent product
- Aim to provide high-quality oysters for the half-shell market

2. Needs Assessment Findings

- Workers
- Professionalism
- Leadership
- New captains (managers)
- New owners
- Seed supply
- Brood stock
- Market saturation
- Wind farms
- Entanglement
- Permitting bird mitigation
- Grower associations
- New lease areas
- Advocacy
- Marine debris
- Liability (Hang Fund for example)
- Maritime law
- Gear tagging

3. Training Needs/Curriculum Outline

- High priority needs for skilled workforce training
 - Gear use
 - Safety/navigation

- Maintenance/repair
- Electronics
- Permitting/legal/regulation
- Business planning
- Marketing
- Partners
 - Sea Grant
 - University labs
 - State agencies (MDMR)
 - Mobile Bay National Estuary Program

4. *Formats*

- Hybrid
- In-person
- Apprenticeship
- Online

5. *Recognition of Training*

- Certificate
- Qualify for lease in state-managed oyster parks

6. *Existing Resources*

- U.S. Small Business Administration
 - Write your Business Plan www.sba.gov/writing-business-plan
 - The U.S. Small Business Administration (SBA) is an independent agency of the federal government to aid, counsel, assist and protect the interests of small business concerns, to preserve free competitive enterprise and to maintain and strengthen the overall economy of our nation. The SBA helps Americans start, build and grow businesses through an extensive network of field offices and partnerships with public and private organizations
- Alabama Small Business Development Center: www.asbdc.org/
- Mississippi Small Business Development Center: www.mssbdc.org/
- Alabama Oyster Aquaculture: <https://alaquaculture.com/>
- Seafood safety
 - Alabama Department of Public Health - Seafood and Shellfish Safety www.alabamapublichealth.gov/foodsafety/seafood-and-shellfish.html
 - Alabama Department of Environmental Management <https://adem.alabama.gov/default.cnt>
 - Mississippi Department of Marine Resources Shellfish Bureau <https://dmr.ms.gov/shellfish/>
 - Mississippi Department of Environmental Quality www.mdeq.ms.gov/
 - Louisiana Molluscan Shellfish Program <https://ldh.la.gov/page/629>

- Texas Shellfish Harvesting www.dshs.texas.gov/seafood/shellfish-harvest-maps.aspx
- Interstate Shellfish Sanitation Conference (ISSC) www.issc.org/
- National Shellfish Sanitation Program (NSSP) www.fda.gov/food/federalstate-food-programs/national-shellfish-sanitation-program-nssp
 - The National Shellfish Sanitation Program (NSSP) is the federal/state cooperative program recognized by the U. S. Food and Drug Administration (FDA) and the Interstate Shellfish Sanitation Conference (ISSC) for the sanitary control of shellfish produced and sold for human consumption. The purpose of the NSSP is to promote and improve the sanitation of shellfish (oysters, clams, mussels and scallops) moving in interstate commerce through federal/state cooperation and uniformity of state shellfish programs
- Workforce development and training
 - Online Off-Bottom Oyster Farm Training for the Gulf of Mexico <https://oyster-culture.teachable.com/>
 - Storm and Hurricane Preparedness for Off-Bottom Oyster Aquaculture in the Gulf of Mexico <https://shellfish.ifas.ufl.edu/hurricane-resources/>
 - Gulf of Mexico Sea Grant College Programs www.gulfseagrant.org
 - MDMR Shellfish Bureau Oyster Aquaculture Harvest Program
 - In-person class with a field component and a year's worth of support from MDMR
- Crop insurance information
 - Group Risk Plan www.rma.usda.gov/Fact-Sheets/National-Fact-Sheets/Aquaculture-Oysters-Clams-WFRP
 - Noninsured Crop Disaster Assistance Program www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/FactSheets/noninsured_crop_disaster_assistance_program-nap-fact_sheet.pdf
- Marketing planning
 - Creating a Marketing Plan for your Business (with templates) www.indeed.com/hire/c/info/creating-a-marketing-plan#4
 - A Step-By-Step Guide to Your 2022 Marketing Planning www.statsocial.com/2022-marketing-planning-guide
 - What is a Marketing Plan and How to Write One [+Examples] <https://blog.hubspot.com/marketing/marketing-plan-examples>
- Business planning
 - Fish Biz <https://fishbizplan.org/>
- Comprehensive planning
 - Alabama Coastal Comprehensive Plan Storyboard Maps: www.arcgis.com/apps/MapSeries/index.html?appid=470487519df24b9ebb08f89084d6cead
 - The Mississippi Gulf Coast Restoration Plan: <http://msrestoreteam.com/NFWFPlan2018/>

- Mapping and forecasting
 - Mobile Bay Salinity Forecast Guidance NGOFS2 - Mobile Bay Salinity Forecast Guidance
 - Mobile River at Barry Steam Plant
https://waterdata.usgs.gov/al/nwis/uv?site_no=02470630
 - Alabama Real-Time Coastal Observing System <https://arcos.disl.org/>
 - HABSOS <https://habsos.noaa.gov/>
 - USGS Coastal Mississippi Current Conditions by Station USGS Current Conditions for Mississippi
 - National Hurricane Center www.nhc.noaa.gov/
 - Mississippi Beach Monitoring Program
<https://opcgis.deq.state.ms.us/beaches/closures.php>
 - Alabama Beach Monitoring program
www.alabamapublichealth.gov/environmental/beach-monitoring.html
 - Mississippi-Alabama Sea Grant Resilience Indices <https://masgc.org/coastal-storms-program/resilience-index>
 - Federal Emergency Management Agency www.fema.gov/
 - FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain and improve our capability to prepare for, protect against, respond to, recover from and mitigate all hazards
 - Ready www.ready.gov, www.readu.gov/business
 - A program of the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA), Ready is a national campaign designed to educate and empower Americans to prepare for and respond to emergencies including natural and man-made disasters. The goal of the campaign is to get the public involved and ultimately to increase the level of basic preparedness across the nation
 - Ready Business will assist businesses in developing a preparedness program by providing tools to create a plan that addresses the impact of many hazards. This website and its tools utilize an "all hazards approach."
 - Coastal Flood Exposure Mapper
<https://coast.noaa.gov/digitalcoast/tools/flood-exposure.html>
 - This tool supports users undertaking a community-based approach to assessing coastal hazard risks and vulnerabilities by providing maps that show people, places and natural resources exposed to coastal flooding. This product is based on knowledge and experiences the Office for Coastal Management has in community-based risk and vulnerability assessments
 - Testing laboratories (certified by ISSC/state agencies) can provide a list of locations in the Gulf of Mexico or serve Gulf of Mexico to reduce closure time
 - ISSC Laboratory List www.issc.org/laboratory-1

7. Partners

- Sea Grant works with and assists in training with other state programs

8. Needed Resources

- Coordinator for the region for a training plan
- Funding for events, workshops, speakers, demonstrations, etc.
- Minimize duplication of effort

Topical - Safety

1. Background

- All sectors of the Gulf fisheries and aquaculture require safety training. This is an overview

2. Training Needs

- Some training will apply to all sectors, while some will only apply to offshore or inshore sectors
 - What to do if your boat goes down/capsize (stay with the boat), always a group that tries to swim to shore every year and drown
 - Man overboard training
 - Stings venomous fish vs. jellyfish
 - Check your plugs and bilge pumps
 - CPR/first aid
 - Emphasis on what is approved by the Coast Guard, as some throwables/safety gear isn't, as well as other options people might want to use
 - EPRB - person EPRBs- inshore fisheries recommendations for fishermen that work alone
 - Disposal of old safety gear- flares, etc.
 - Illegal drug use - and alcohol - safety concerns on vessels
 - Good Samaritan laws
 - Mental health/first aid training - online trainings (fairly inexpensive)
 - Emergency situation communications - who/how to contact
 - Navigation/anchoring at night - lights, etc. (especially on smaller vessels) - manning the wheel/lookout at night
 - Navigation in low visibility
 - Radar - how to use, electronic equipment requirements/recommendations
 - Burns, electrocution
 - Dive flag awareness/fishing etiquette
 - Vibrio: oyster, and in commercial fisheries - cuts, open wounds - how to clean on vessel
 - Weather conditions and monitoring/communications - increasing storm concerns ...

- Radio communications instructions - language guide - pilots association on basic language - language barrier issues ...
- A list of safety items that should be on vessel (required and recommended)
- Special location concerns
 - Separate set of rules around the Mississippi River- to go up and down and across - bridge, vessel traffic, navigation (collision issue), Coast Guard gear requirements, life raft requirements
 - LNG ports- safety rules around
- Specific groups
 - For-hire:
 - Captain required to have first aid and CPR training
 - Recommended crew (what happens if captain is disabled)
 - Passenger safety: hypothermia, fall overboard, hook in finger/body, dehydrations/sun exposure, etc. Sea sickness, illness in general
- Diving fishing
- Shrimp:
 - Aging vessels in the shrimp fleet - vessel maintenance associated with safety concerns
 - Drill conductor training
- Aquaculture
 - Basic navigation and boat operations
 - Oyster harvest license
 - Safety when handling heavy gear - know your weight, buddy system, proper lifting technique

3. Formats

- Online: USCG requirements for vessel, navigation - could do a tour of a boat (interactive tour) www.thinglink.com/video/1449910078894243843
- In-person: Scheduling first aid/CPR around fishermen schedules, hands-on for any sort of first aid, wound treatment, etc.
- Hybrid approach may be best
- Pocket guides, laminated sheets and magnets, waterproof, plastic paper and 4x4 magnet with local contact for emergencies

4. Existing Resources/Partners

- AMSEA
- USCG Commercial Vessel Safety Officers
- DAN
- Red Cross
- Oregon Sea Grant- fishermen first aid?
- State agencies
 - FWC
 - LDWF

- TPWD
- State health agencies
- Boater safety course, etc.
- Southwest Ag Center (UT Tyler)
- UTMB/NIOSH - dockside clinics
- Mental Health First Aid www.mentalhealthfirstaid.org/take-a-course/find-a-course/
- Boat U.S. Foundation www.boatus.org/
- FWC Boater Education <https://myfwc.com/boating/safety-education/>
- FWC Boating Safety Courses <https://myfwc.com/boating/safety-education/courses/>
- Louisiana Fisheries Forward