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FISHING



## Experiences in the Gulf of Mexico: Overcoming Obstacles for Commercial Fishing Occupational Safety and Health Research

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### ABSTRACT

Researchers involved in community-based participatory research often face challenges due to numerous dynamic factors, including the physical location of the study population, willingness to participate, language barriers, cultural norms, social stigmas, and unpredictable weather and other disasters. Investigators who work with commercial fishermen are all too familiar with these potential obstacles and barriers to performing occupational safety and health research. Such has been the case along the Texas and Louisiana gulf coasts, where the burden of occupational fatalities in the shrimp fishery remains high. Moreover, the need for strategic community, regulatory agency, and research partnerships in order to explore solutions that can help to reduce this burden is ongoing. The IFISH 5 conference and the panel session described in this brief report offered a venue to acknowledge and create awareness of these barriers and opportunities for developing sustainable solutions that can have an impact on this loss of life. The approach taken was to explore the perspectives of a panel of regional collaborators including two researchers, an outreach community liaison, and a marine safety and health official from the U. S. Coast Guard. Key barriers emerging from the panel fell into four themes, each emphasized by one of the four panel members, allowing for discussion of potential solutions. The themes included: (1) language gap; (2) cultural influences and use of personal flotation devices; (3) relationships with the community; and (4) enforcement agency role as a trusted opinion leader. This panel session can readily serve as a model to promote similar exploration of barriers and solutions in commercial fishing across other regions of the US and internationally as well.

### KEYWORDS

Shrimp fishery; Gulf of Mexico; IFISH 5; occupational fatalities; cultural barriers; Vietnamese; personal flotation devices

In June 2018, the Fifth International Fishing Industry Safety and Health Conference (IFISH 5) was convened at St. John's, Newfoundland and Labrador, Canada where industry safety and health professionals networked to exchange current research and share best practices. This represents a brief report of one session's proceedings.

### Background and the Gulf of Mexico

While some progress has been made in recent years, the commercial fishing industry still holds the greatest risk for work-related deaths in the United States.<sup>1</sup> Fatality rates in this group of workers were 23 times higher than the national average for all industries during 2016.<sup>2</sup> From 2000 to 2016 unintentional falls overboard accounted for 27.0% (or the second highest number) of all work-related commercial fishing deaths (204 fatalities). The burden of fatal falls

overboard was greatest in the Gulf of Mexico (GOM) shrimp fishery (34,16.7%). Available case data show that for all unintentional fatal falls overboard none of the recovered victims was wearing a personal flotation device (PFD). Moreover, there are no mandates currently for commercial fishermen to wear PFDs.<sup>3</sup>

The variability among fishing vessels, gear, crew size, season, environmental elements, and workforce has challenged the calculation of comparable work-related injury and fatality rates across fisheries and between commercial fishing and other industries. Improved full-time equivalent (FTE) calculation methods provide uniform work exposure for all fishermen that yields comparable mortality rates across regions and fleets.<sup>4</sup> Using these improved methods, since 2000, the GOM region, and the shrimp fleet in particular, have consistently experienced among the highest numbers and rates of commercial fishing

fatalities across the US. Moreover, commercial shrimping is labor intensive; operation of nets, rigging, and winches on typically wet/slick surfaces requires balance, agility, and strength. Although older fishermen may be more skilled due to experience, physical challenges may contribute to slips, trips, and falls overboard. In short, commercial fishing continues to be recognized as a dangerous trade.

### Panel session at IFISH 5

That there are challenges associated with safety and health research in hard-to-reach groups by virtue of their occupation comes as no surprise. The vulnerability of these workers, based upon the rural or isolated setting of their work, their migration activities, and/or their immigrant status is particularly acute in the agriculture, forestry, and fishing sector.<sup>5,6</sup>

There are recognized barriers to occupational safety and health research in commercial fishing, both internal and external to the trade. Regarding the former (internal), cultural views of fatalism related to workplace injuries, language gaps, and trust versus respect for authority and opinion leaders in adopting recommended workplace safety measures have been important. Externally, informal work arrangements, short-term job placements resulting in peaks and troughs of work, economic factors such as competitive import prices and high costs of equipment maintenance/fuel, a myriad of regulatory controls, and unexpected weather events and disasters come to bear.

The focus of this IFISH 5 session was to examine recognized barriers to occupational safety and health research and work practice adoption in commercial fishing (internal and external), as well as benefits of strategic partnerships. Moreover, the approach taken was to explore the perspectives of four of the collaborators/co-authors heavily engaged in the last decade of work of the NIOSH supported Southwest Center for Agricultural Health, Injury Prevention, and Education (SW Ag Center). The panel of collaborators included two research investigators (Levin and Carruth), an outreach community liaison (Bui), and a marine safety and health official from the U.S. Coast Guard (USCG; Perkins). Each provided remarks in response to the following panel questions:

- What do you feel has been a key barrier to the adoption of safety practices among commercial fishermen in the Gulf of Mexico?
- Can you recall a personal experience or anecdote related to barriers to safe behavior adoption in this population?
- How has this research project(s) helped to overcome those barriers?

The purpose of this effort is to share regional experiences among collaborators, across disciplines, and with the community in a manner that reveals barriers that may interfere with the adoption of safe work practices. The goal is to create awareness of these barriers and propose solutions. Moreover, this could readily serve as a model to promote a similar exploration of barriers and solutions in other regions.

### Key barriers emerging from panel discussion

#### *Language gap (researcher)*

Scant information is available about the shrimp fishermen along the Texas and Louisiana coast; limited available data tend to be aggregated for the entire GOM region.<sup>2,4,7–10</sup> Summary data for 2017 from two sources indicate that 93.9% of GOM commercial fishermen were male. Of note, 40% of fishermen and owners were age 55 and older, 28.2% aged 45–54, 13.6% were 35–44, and only 13.6% were younger than age 35.<sup>10</sup> The demographic make-up of individual ports or landing sites may vary and differ from the aggregate for the GOM region. In a convenience sample of commercial fishermen in and near the Port of Galveston, 96.7% were male with 60.9% ≥40 years old. A majority were of Asian descent (57.1% of all fishermen, 82.1% of shrimp fishermen).<sup>11</sup>

Additional demographic information from industry partners and the SW Ag Center research experience indicates that communities of Vietnamese and Hispanic shrimp fishermen are well established at several ports in Texas and Louisiana as a result of immigration patterns.<sup>11,12</sup> Over the last decade, the SW Ag Center has established and nurtured key partnerships over years of collaborative work with commercial fishermen in Texas and Louisiana. The research team and the network of partners, including the USCG have become well known and trusted by

commercial shrimp fishermen along the Texas and Louisiana coasts. This has involved a variety of quantitative/qualitative methods including focus groups, surveys, and a community trial with quasi-experimental pretest/posttest intervention design.<sup>13</sup> Of note is that surveys performed in this study among convenience samples at three port sites along the GOM from eastern Texas across Louisiana showed a preponderance of Asian fishermen (approximately 95% or greater). This collective work has revealed not only a lack of access to but also comprehension of meaningful safety information as a consequence of cultural and language considerations for this population of GOM shrimpers.

One of the research investigators identified language as a key barrier to research and training efforts when Vietnamese shrimp fishermen are reluctant to communicate by radio for fear of embarrassment when Mayday calls must be delivered in English. Such cultural obstacles interfere with critical communication and learning knowledge and skills such as vessel navigation and sound signaling ship-to-ship, despite years of experience with vessel operations. One captain noted that he had been fishing for 20 years and “never knew what the different horn blasts meant”. The SW Ag Center was able to develop and disseminate a multi-lingual interactive CD for training for this purpose to include navigation sound signaling and conducting a Mayday call in English.<sup>14</sup> Mayday calls must be made using the English language, and therefore, training should include practice time for fishermen to become proficient at making radio calls in English. Moreover, there may be concepts in one culture or language for which other languages do not have a comparable word or phrase, or where a word or phrase has different meanings dependent upon the context. Likewise, the importance of making research tools such as surveys and focus group questions available as verbal and written communications in both English and Vietnamese has become apparent.

### ***Cultural influences and adoption of personal protective equipment (researcher)***

It is well known that wearing a PFD or life vest when on deck can substantially enhance rescue efforts in a fall overboard. PFDs are designed to keep the victim afloat to prevent drowning, reduce fatigue,

improve the ability of the onboard crew to maintain visual contact to guide the rescue effort, and to help preserve body heat. Yet, commercial fishermen have been loath to wear them due to bulkiness, discomfort, and encumbrance of task performance.<sup>3</sup> Exploration of deterrents to PFD wear among lobster fishermen in the Northeast US added identity/social stigma to other documented reasons for not using this safety device.<sup>15</sup> Among GOM commercial fishermen, in addition to the bulkiness that interferes with work, the added heat load was cited as a barrier (Carruth, personal communication from the report submitted to NIOSH Alaska Pacific Regional Office, 2016, now the Center for Maritime Safety and Health Studies managed by the NIOSH Western States Division). Also, unique to Vietnamese men is the issue of small stature and PFDs not fitting properly. Understanding the importance of how workers physically interact with their work environment, machinery, work tasks, tools and equipment, personal protective equipment (PPE), and the like is critically important. Furthermore, recognizing that PPE such as a PFD, if improperly fit to the worker, may not only decrease its effectiveness, but poor fit and comfort may also reduce its likelihood of use or adoption, thereby altogether affecting adverse risk at which the PPE is targeted.

Culture plays a significant role in attitudes/beliefs among Vietnamese shrimp fishermen of the Gulf and may influence behaviors that are risk factors for fatal and non-fatal injuries.<sup>16</sup> In particular, commercial fishing industry leaders are able to influence behaviors and practices among fishermen. Over the last decade, safety tip cards, interactive CD instructional tools for vessel sound signaling and Mayday calls, and signage for a variety of safety concerns have been developed and disseminated. Statistically significant changes in attitudes/beliefs have been noted. Presently, identifying and assessing barriers to use of lifesaving PFDs (including comfort and heat stress), preferences of commercial fishermen for various PFD designs, and development of a social media campaign to promote use on deck are underway. Among the conclusions derived from this work have been that culturally appropriate training and awareness measures combined with recognizing normative influences can favorably alter attitudes, beliefs, and behavioral intent related to workplace safety in this population.<sup>16</sup> This proved to be the case not only with promoting the



adoption of lifesaving PFDs but the use of other personal protective equipment aboard vessel such as hearing protection (signage in Vietnamese; see Figure 1).

### ***Relationships with the community (outreach community liaison)***

The outreach community liaison participating on the panel has served as a long-time collaborator with the SW Ag Center in their role as an agricultural extension and Sea Grant agent within the local Louisiana Vietnamese community. Her father is a fisherman and her husband's family are dock owners. Historically, in this research context, there has been a relative absence of opinion leaders from the community to encourage behavior change. This individual is trusted to translate and interpret new regulations while also connecting among community, USCG, and researchers in the context of initiatives such as survey administration (see Figure 2).

The outreach community liaison has a Vietnamese heritage, speaks Vietnamese fluently, and is respected in the community. Her understanding of the culture and the industry has helped the research team recognize that even though early January and February typically might be good times to collect data while fishing waters are closed, many fishermen return home to Vietnam to their extended families to celebrate Tet, the upcoming lunar new year. Money is considered good luck, so gift cards have always been

one of the best motivators for project activities. When Saigon fell during the mid-1970s, refugees came to America. They did not have enclaves of relatives to welcome them into communities. Over time, Vietnamese families have migrated to southern states, predominantly because they are most like the sub-tropical climate of Vietnam. The majority of fishermen immigrated from Vietnam and speak very little English. This means that many crews are entirely Vietnamese and comprised of older workers, given the years lapsed since migration following the end of the Vietnam war (referred to as the American war to those from Vietnam).

### ***Enforcement agency role as trusted opinion leader (USCG official)***

The research team members have not been the only ones to have perspectives informed by community thought leaders. Challenges and barriers have been overcome through a committed, caring working relationship among project partners (see Figure 3). Members of the marine safety unit of the USCG were able to engage the community of Vietnamese and Hispanic commercial fishermen through the development of a mutual understanding and respect. The ability of the USCG to access the community through dockside exams provided a conduit for the work of the research team. Additionally, the Vietnamese community accepted and entrusted USCG partners as evidenced by marine safety unit officer invitation to and attendance at family gatherings (e.g., weddings).

USCG partners also gained insight into the relevance of training in Vietnamese rather than English. This came to light during safety training sessions where basic skills thought to have been learned during prior routinely held dockside exams and training events, were not understood until taught in the Vietnamese language. Having the assistance of Vietnamese trainers who could translate and/or instruct in Vietnamese was recognized as a means of promoting the performance of safety drills and conducting Mayday calls in English.

### **Conclusions**

The burden of occupational fatalities in the shrimp fishery of the GOM remains significant. Many of



**Figure 1.** Hearing signage (in Vietnamese) and personal protective equipment (PPE) placed aboard a shrimp vessel in the Gulf of Mexico at the entry to the engine room.



**Figure 2.** Co-author Thu Bui (community outreach liaison, center, standing), administering surveys to commercial fishermen.



**Figure 3.** Co-authors (left to right) Robert Perkins (U.S. coast guard marine safety official), Ann Carruth (co-investigator), Jeffrey Levin (co-investigator). Photo taken at USC 8th District office in New Orleans.

the commercial fishermen of the Texas and Louisiana gulf coasts experience language and cultural barriers that can influence relationships with community partners and receptivity to recommended workplace safety practices such as PPE/PFDs, thereby contributing to this burden. Recognition and awareness of key barriers support the need for strategic community, regulatory

agency, and research partnerships in order to identify potential solutions that can help to reduce fatalities. The IFISH 5 conference and this panel session offered a venue to acknowledge and create awareness of these barriers and opportunities for developing sustainable solutions which can have an impact on this loss of life. It served as a platform to acknowledge broader applicability

to promote collaborative exploration of regional barriers in other fisheries across the US and internationally as well.

## Disclosure statement

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