Social Dimensions of Gulf of Mexico Shrimping

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SEDAR87-DW-15

29 November 2023

Please cite this document as:

Griffith, David, Christopher Liese, Mike Travis, Matt Freeman, David Records 2023. Social Dimensions of Gulf of Mexico Shrimping. SEDAR87-DW-15. SEDAR, North Charleston, SC. 12 pp.

Social Dimensions of Gulf of Mexico Shrimping

SEDAR87 Working Paper

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Introduction

Apart from including data in SEDAR 87 modeling efforts, economic and social scientific data can assist in explaining variation in the shrimp fishery across time and space in the Gulf of Mexico and assist in anticipating the impacts of regulatory changes on the industry and fishing families and communities. Although shrimp are an annual crop, subject to changes from year to year from environmental, anthropogenic, and other developments, the fleet remains an economic and social force in the Gulf that changes more slowly, also due to many fishery-external social and economic developments. For example, the fleet shrunk significantly since the 1990s, yet, with few exceptions, landings have remained between 80,000,000 and 100,000,000 lbs., reflecting both the consolidation of the industry and effective fishing effort and the resulting increase in CPUE through the first two decades of the 21st century.

Undoubtedly, these changes have altered the composition of the fleet as well as its two most directly related sectors of shrimp dealers and processors. At least 35 communities from Port Aransas, Texas to Fort Myers Beach, Florida benefit from Gulf of Mexico shrimp landings and the multiple contributions of shrimping families to local civic institutions, economies, and cultural complexions (GMFMC 2017: 68). The fleet consists of both small and large vessels, the former of which tend to fish inshore and offshore state waters without federal permits while the latter fish in the Gulf EEZ with federal permits. Federal permits for Gulf EEZ fishing have been required since 2003 and a moratorium on permits began four years later. At that time, the fleet consisted of around 4,700 vessels, with one-third of them federally permitted; that proportion dropped to around 25% of the more than 5,000 vessels fishing in 2014. Despite the larger number of small, inshore vessels, the federally permitted vessels tend to land between 50% and 60% of all Gulf of Mexico shrimp. Fluctuations in relative contributions of different sectors of the fleet, and how these change from year to year, are due in part to one or more of the multiple constraints on Gulf of Mexico shrimping effort.

Social, Cultural, and Economic Constraints on Effort

A number of issues raised in the literature on shrimping and from shrimpers, shrimp dealers, and others familiar with the industry constrain shrimping effort from season to season and year to year. Natural environmental factors such as temperature and salinity are often cited for their impacts on annual shrimp crops, but social, cultural, and economic factors can be equally influential in how many, what varieties, and when shrimp are landed in the Gulf of Mexico. Among the most important, of course, has been the loss of habitat from coastal development, yet other factors include shrimp imports/ world trade, vessels

crews and processing sector labor, anthropogenic processes, political considerations, and even cultural developments such as dietary behaviors and nutritional beliefs. We discuss a few of these below.

Deteriorating Economics from Shrimp Imports

While the impacts of imports on shrimp prices is primarily an economic issue, seafood imports have become highly politicized, drawing on social phenomena ranging from opinions about the role of the World Bank and United Nations in supporting shrimp aquaculture overseas to the importance of low-cost shrimp to consumers. Various government entities in the United States, such as the U.S. Department of Agriculture, the Food and Drug Administration, and the Federal Trade Commission, have promoted low-cost food for U.S. consumers through much of the 20th century until today (Nestle 2002). This has been accomplished through a combination of increasing the efficiency of food production through the consolidation of farming, vertical integration of food processing, and other methods, including relying on lower cost imported food. Indeed, lower U.S. thresholds for the detection of antibiotics in imported shrimp than those used in the European Union resulted in Asian shrimp being diverted from E.U. to U.S. markets, further contributing to the economic crisis of imports for Gulf of Mexico shrimp (Keithly and Poudel 2008:472).

Imported food contributes to keeping food costs low by allowing food produced with low-cost labor and under less harsh environmental and consumer safety regulations to enter the country; imported seafood, especially shrimp, are often produced in aquaculture or mariculture ponds abroad. Keithly and Roberts (2017) and Keithly and Poudel (2008) attribute much of the decline in Gulf of Mexico shrimp prices to imported shrimp. After remaining above $2.50 per pound through much of the 1980s, since the 1990s the deflated shrimp prices (for headless weight) fell to around $2.00 through the 1990s and subsequently from around $2.00 in 2001 to around $1.25 per pound in 2006 (Keithly and Poudel 2008:468). From 2007 to 2014, Gulf of Mexico shrimp dealers were receiving prices that ranged from a low of $1.40/ pound (whole weight) in 2009 to a high of $2.84 in 2014 (GMFMC 2017:54). While these figures compare whole weight to headless weight, they nevertheless demonstrate the fluctuation in prices that shrimpers have to contend with.

These prices were reflected in ex-vessel values of the Gulf of Mexico landings, which fell "from an average of just over $400 million annually during 1990-1994 to about $350 million annually during 200-2009. After adjusting for inflation, the decline was approximately 40%, from $617 million to $367 million (expressed in 2009 dollars). While there are several reasons for the decline in the Gulf dockside shrimp price beginning in 2001, the overriding one is that of increasing imports" (Keithly and Roberts 2017:1057-1058). They go on to note that, since 2000, the U.S. has been importing shrimp from over 40 countries, most in Asia and Latin America.

In response to declines in Gulf dockside shrimp prices in the face of increasing imports, in 2003, several organizations representing U.S. shrimpers and processors accused several countries of unfair trade practices resulting in the dumping of low-cost shrimp on the U.S. economy (Keithly and Poudel 2008). Petitioning the U.S. International Trade Administration and Commission, they were able collect duties on the six accused countries' shrimp and recover some of their losses. Nevertheless, Gulf shrimp prices did not respond positively, in part due to continued imports from countries not named in the petition and in part from the recession that began in 2008, shortly after the duties were imposed (Keithly and Poudel 2008; Keithly and Roberts 2017).

Although shrimp imports have been declining over the past 11 months (SeafoodNews.com October 16, 2023), they still account for the majority of all shrimp consumed in the United States. Recent declines may be due to increased supplies of shrimp during and after the COVID-19 pandemic, which may have

resulted in oversupplies of frozen shrimp in the freezers of large wholesale dealers and retail chains and a consequent lack of demand by companies such as Walmart. In any case, imported shrimp come in a variety of forms and mixed with different products in prepared meals, making the volume of imports difficult to track accurately. In a recent article, Gephart, et al. (2019) argue that statistics on imports are underestimates and that domestic seafood make up larger portions of U.S. consumption than previously thought. Much of their argument rests on salmon that is landed in the United States, exported to China for processing, and then returned to the United States and added to its seafood trade deficit. Their conclusions may not be quite so directly relevant for Gulf of Mexico shrimp, but these practices can lead to confusion in the overall seafood industry, making it difficult to determine the relative importance of imported seafood and domestically landed seafood to the general public. When it comes to shrimp, however, continued reliance on imports among the majority of seafood consumers is at least partially responsible for multiple other problems facing Gulf of Mexico shrimpers. We address these below.

Labor

Current incomes from shrimping preclude paying competitive shares or wages to crew and workers in the processing sector, a situation that has led to the use of immigrant labor, much of it hired legally with the use of "non-immigrant," H-2B visas, which are issued to workers performing temporary or seasonal economic services in the United States (Griffith 2006). Hired labor on vessels constitutes the second largest cost, behind fuel, and has risen from an average of around $50,000 in 2006 to closer to $80,000 to 90,000 in the late 2010s (Liese 2023). H-2B visas, however, have a cap of 66,000 and competition for them with landscaping firms, forestry, the hospitality industry, and other economic sectors has been stiff since they were developed. They also come with paperwork requirements that many shrimpers find onerous and are subject to government and public scrutiny for the occasional correspondence between using guestworkers and engaging in human trafficking (Griffith 2016; Soni 2023). Recently, four countries—Nicaragua, Guatemala, El Salvador, and Honduras—were granted quotas of H-2B visas above the cap and Gulf of Mexico shrimpers, along with other U.S. seafood producers, have been using worker from these countries.

Most H-2 workers in seafood are hired into the processing sector, but Department of Labor disclosure data show that two companies in Brownsville, TX hired 20 deck hands for shrimp vessels in 2023 (Department of Labor, ETA 2023). While this may represent a small number, H-2B workers have been a part of shrimping—on vessels and in the processing sector—since the late 1980s. A study of H-2B workers on Texas shrimp vessels found that the Department of Labor approved only 8 applications in 1988 but that rose to 130 in 1989 and to 261 in 1993; included in the study were interviews with 60 shrimp deck hands working on 24 vessels (Griffith, Heppel and Torres 1994). Although H-2 workers make up a small proportion of Gulf of Mexico shrimp vessel deck hands, their continued use suggests that shrimp vessel owners have kept a variety of options open regarding labor recruitment; further, it is not uncommon for H-2 workers to be certified for one occupation and work in others while in the United States, a practice that is illegal but relatively easy to achieve given the low levels of government oversight of the program.

In general, wages remain too low to attract U.S-born crew for shrimping vessels unless those crew are family members of vessel owners who are apprentices to owners and captains, hoping to purchase their own vessels in the future. Yet even this family labor is drying up. At a Gulf Council listening session on September 20, 2023, shrimpers agreed that the current generation was aging out of the industry and that few younger people are entering the fishery; one mentioned that only one of seven nephews and sons was planning to shrimp for a living, which contrasted with the six of seven brothers who shrimped in his generation. It is likely that lack of interest on the part of young members of shrimping families to enter

the fishery is due to its economic condition, which, currently negative, tends to repel both labor and capital. Labor constraints may well further restrict the sizes of shrimp vessels to those with one or two crew or encourage more shrimping from large corporate vessels that have the capacity to hire H-2B workers or other foreign-born workers willing to work for shares or wages low by U.S. standards yet often superior to those in Mexico or Central America. These same pressures may encourage the hiring of undocumented immigrants.

The Deepwater Horizon (DWH) Spill

The 2010 BP oil spill was centered off the coast of Louisiana and affected primarily Gulf of Mexico waters from Louisiana east to the West Florida coast. It occurred in April and lasted through much of the summer and into the fall. The oil and the dispersants used to sink and disperse the oil contaminated much of the marine environment that shrimp use to spawn and mature at sea (Rozas, et al. 2014).

Its impacts were uneven across the shrimp fleet, with some shrimpers and shrimp dealers benefiting from payments that BP paid out beginning in 2011 while others suffered from the national perception, following the spill, that Gulf of Mexico ecosystems were tainted, reducing demand for Gulf of Mexico seafood. Average payments in 2011 were slightly under $10,000 per federally-permitted GOM shrimp vessel yet rose to over $60,000 in 2012 and reached levels near $50,000 in 2013 and 2015, with a high of $68,196 in 2016 (Liese 2023). These payments amounted to around 20% of shrimping revenue, which averaged around $300,000 over this same time period, and were thus potential sources of capital for upgrading vessels, exploring new marketing channels, etc.

A study of the impacts of the DWH on Gulf fisheries conducted in 2015 (Griffith and Halmo 2017; Halmo, Griffith, and Stoffle 2019) found that shrimpers benefited from spotting oil for BP (participating in the Vessels of Opportunity program) and participating other aspects of the clean-up. However, compensation packages for loss of shrimping income depended on how well and accurately shrimpers reported their shrimping revenue from previous years; for tax purposes, some shrimpers underreported revenues and thus received lower payments than they believed they deserved. This practice, while perhaps economically beneficial in the short-term, can have these long-term negative consequences in terms of qualifying for various pay-out programs. Consistently high shrimp revenues following the spill suggest that, despite perceptions of shrimp being contaminated, shrimp were still being landed in volumes that were typically between 80,000,000 and 100,000,000 pounds; the single exception to this was 2010, when under 70,000,000 were landed. Shrimp revenues did not decline precipitously after the spill (Liese 2023).

Social issues affecting shrimp markets

It is widely known, in the Gulf shrimp industry and beyond, that the volume of imported shrimp dwarfs Gulf of Mexico shrimp landings by around twenty times, clearly influencing the composition of shrimp markets. Prior to the nation's heavy reliance on imported shrimp, jumbo shrimp were considered a luxury item and sold for a premium price. Still today, some consumers state that they are willing to pay higher prices for wild caught, sustainable shrimp than for farm-raised shrimp, particularly if they view farm-raised products as adulterated with antibiotics, growth hormones, and other additives commonly used by the food industry; Green (2009) found that U.S. consumers were also willing to pay higher prices for shrimp that was caught sustainably. However, likely because these are "willingness-to-pay" studies, where survey respondents give hypothetical answers to hypothetical questions, conclusions regarding consumers' actual shopping behaviors are mixed. According to the industry group, Seafood Source, a "Changing Tastes" study conducted in 2018 found that consumers expressed a preference for wild caught

over farm raised seafood, but the same study group found no preference only two years later (SeafoodSource 2020).

In response to consumer concerns over their food supply, several organizations representing the shrimp industry have initiated programs to educate consumers about the quality of wild caught vs. farm-raised shrimp. This includes promoting labeling of shrimp as wild caught for end consumers, in supermarkets and restaurants, and developing a certification program. The success of such programs, however, has yet to be determined, and large retail outlets such as Walmart continue buying and selling imported shrimp in forms that have extended shelf lives, usually frozen. In addition, shrimpers and seafood dealers we interviewed said that the packaging of imported seafood is often deceptive, labeling products as "packaged in the USA" in large letters with U.S. flags while in smaller, tiny print stating: "Product of Vietnam." In general, programs promoting wild caught shrimp have not been successful in the long-term. NMFS and others didn't only support marketing campaigns for wild caught shrimp (particularly "Gulf Wild"), but also TX shrimp, LA shrimp, FL pink shrimp, etc. In those cases, the effect on demand was temporary because the funding was temporary. Consumer specialists at USDA report that these marketing campaigns only work in the long-term if you have long-term funding to support them (e.g., a fee/tax attached to sales of the product—Mike Travis, personal communication).

These arguments apply to the growing consumer interest in buying local products for their freshness, contributions to local economy, and reduced carbon footprints. Responding to shrimpers' protests over declines in prices for local shrimp, in 2004 Louisiana implemented Act 904, creating a Shrimp Trade Petition Account. This was designed to "promote and protect the sale of domestic wild caught shrimp" in part by imposing a fee on wholesale and retail seafood dealers who pay a shrimp excise tax (Anonymous 2023). Again, the impacts of these changes on the promotion of local shrimp sales are questionable, given the volume of imported shrimp vs. wild-caught, domestic shrimp from U.S. vessels.

Shrimp Harvesting Sector Consolidation

"In 2002, the European Union raised its tariff on imported shrimp from Thailand, leading to dumping of foreign shrimp on U.S. markets and a drastic reduction in price. The situation was so bad that in 2003, the U.S. government provided emergency disaster relief of $17.5 million to Gulf of Mexico shrimpers" (Diamond 2004).

"After the establishment of the federal commercial Gulf shrimp moratorium permit in 2006, the shrimp fishery experienced economic losses, primarily due to high fuel costs and reduced prices caused by competition with imports. These economic losses resulted in the exodus of vessels from the fishery, and consequently, reduction of effort." (Gulf Mexico Fishery Management Council 2017).

Both of the above statements were made *after* the beginning of the effort reduction in and consolidation of the Gulf of Mexico shrimp fleet, which coincided with the rise of imported, farm-raised shrimp and, somewhat later, rapid, steep increases in fuel prices, especially following September 11, 2001. Beginning in 2003, Gulf of Mexico shrimping effort began a precipitous fall from a relatively stable level of around 203,000 fishing days to under half that, or 92,372 fishing days, by 2006. From 2007 to 2016, Gulf shrimping effort 69,554 days, or a "66% reduction from the 1990 to 2002 period" (Galloway, et al. 2020). Galloway, et al. attribute part of this reduction to regulatory measures following widespread complaints of shrimp nets catching juvenile red snapper as bycatch, particularly in an area stretching from south Texas to Alabama known as the "index zone." Fishery managers capped shrimping effort in the zone, which ranged from waters 10 to 30 fathoms deep off the four states' coasts, to no more than 21,531 days, or a 74% reduction, but relaxed this measure in 2011 and again in 2019 as the red snapper population continued to rebound (Galloway, et al. 2020:2). Although the number of days were increased

each time by over 5,000, by 2019 this only allowed an additional four days of fishing per vessel in the zone.

Despite growing evidence that red snapper stocks were rebounding, the Gulf of Mexico recreational fishing community continued to target shrimp trawling bycatch as a major threat to red snapper, advocating for continued restrictions. Again, according to Galloway, et al (2020:3):

> "Amendment 18 (recently approved) to the Gulf of Mexico Fishery Management Council's (GMFMC) Shrimp Fishery Management Plan (FMP) allowing increased effort in the shrimp fishery (GMFMC (Gulf of Mexico Fishery Management Council), 2019) generated intense criticisms. A series of articles strongly opposing the proposed rule by mischaracterizing the magnitude of shrimp trawl bycatch in the Gulf of Mexico... Erroneous claims included the contention that shrimp trawls catch 7 pounds of fish for every 1 pound of shrimp (since the mid-2000s bycatch ratios have been closer to 2:1 It's a quote, but this seems very wrong 4:1) and that increasing shrimping effort was projected to 'result in the loss of 3.1 million pounds of Red Snapper every year' that could otherwise be harvested in directed fisheries."

Additional criticism of shrimp trawling claimed that it damaged substrates and marine ecosystems in ways that were devastating to Gulf of Mexico fishing. Highly organized and politically active, recreational fishing interests have been responsible for reductions in shrimp trawling elsewhere in the Gulf of Mexico and in other states and regions. Similar political opposition led to a net ban in Florida waters in the mid-1990s. In North Carolina, in 2013, recreational fishing interest opposed inshore shrimp trawling despite advice against such a regulation by multiple scientific advisory boards; after testimony by over 200 shrimpers and others, the state's Fisheries Commission voted to allow continued shrimping in the sound. As in the Gulf of Mexico, opponents to shrimping in that case argued that shrimp trawling damaged substrates even as fisheries scientists presented recent research findings that showed little damage to marine ecosystems and that, in some cases, trawling enriched the marine food web (Luczcovitch, et al. 2021). In 2020, a second group of recreational fishermen attempted to halt North Carolina shrimping, alleging in a law suit that shrimping violated the Clean Water Act. Although, again, shrimpers' access to shrimp was upheld in court, these cases demonstrate that recreational fishing interests continue to threaten shrimping in state and federal waters. We can anticipate continued pressures on shrimpers from the recreational fishing community in the Gulf of Mexico, possibly encouraging shrimpers to leave the industry from continued negative publicity, continuing a trend that has been occurring since the 1980s.

In August 2023, National Public Radio reported from Port Isabel, Texas, emphasizing the decline in numbers of vessels from around 500 in 1980 to fewer than 100 today (National Public Radio 2023). These figures are reflected in the loss of 494 federal shrimping permits from 2007 to 2020, constituting a decline of around 25% (GMFMC 2017:3). The discussion above suggests that several factors have driven this decline, making it difficult to isolate a single cause. As with U.S. agriculture, which experienced the loss of number of farms with the rise of farm sizes through the 20th century, consolidation tends to come about due to developments in commodities markets, financing and credit markets, the promotion of efficiency over community, labor constraints, rising energy and other input costs, and the lure of livelihoods that are less dependent on seasonal fluctuations and other forces outside of human control. How much of the decline in effort and numbers of shrimping operations and their consolidation can be attributed to economic developments such as fuel prices and imported shrimp and how much to political factors such as regulatory restrictions? Did the availability of labor play a role? Were there demographic changes taking place to account for the consolidation? Finally, what were the geographical dimensions of the consolidation? Did Florida fleets constrict while those in Louisiana and Texas grew?

Again, these questions point to multiple factors at work in the Gulf of Mexico shrimp fishery. Through these changes, shrimp continue to be landed, and the fishery contributes nearly half of all dockside value of Gulf of Mexico commercial fisheries (Keithly and Roberts 2017). As noted earlier in this report, shrimp landings have fluctuated between 80,000,000 and 100,000,000 pounds for the past couple of decades; with the decline in number of vessels, CPUE rose from 596 pounds in 2003 to 955 in 2014, with some years over 1,200 (GMFMC 2017:23). Keithly and Roberts attribute the increased CPUE to the reduction in fishing days, which results in more shrimp available to be caught per trip with fewer vessels trawling for the same number of shrimp.

Despite higher CPUE and continued high-value landings, Keithly and Roberts conclude that the economic outlook for the fleet is bleak, although this varies by vessel size and inshore vs. offshore shrimping. They note that smaller vessels tend to be more profitable than larger vessels, but that this may be due to smaller vessels operating part-time and choosing to trawl for shrimp during the months where shrimp are larger and dockside prices higher. For vessels vertically integrated into the processing sector, having to fish on a more full-time, dedicated basis, they may be able to sustain their operations by focusing on value-adding on shore rather than at sea. "In the years since 2000, market forces have exerted tremendous economic pressure on individuals who depend on the harvesting of seafood as their primary source of income. As the largest sector of that industry by value, the shrimp fleet of the U.S. Gulf of Mexico is also the most threatened by those market forces" (Keithly and Roberts 2017:1078).

With such a bleak financial outlook in 2017, why were landings for the first three quarters of 2022 75.5 million pounds, as reported by NOAA (Southern Shrimp Alliance 2023), or the most since 2013? Clearly, some vessels were continuing to trawl for shrimp even with persistently high fuel costs at least through the first nine months of the year (before low dockside prices kicked in during the fourth quarter). One factor that we have not dealt with in great detail is the changing ethnic composition of the shrimp fleet and its role in the consolidation of the fleet, the ratio of inshore to offshore vessels, and other factors. Griffith covered this in some detail in the working paper he produced for the SEDAR87 data workshop, the relevant part of which is reproduced and annotated further here.

Labor and ethnic considerations in the consolidation of Gulf of Mexico shrimping

As with much of the seafood industry in the United States, Gulf of Mexico shrimping and shrimp processing has become dependent on immigrant and refugee labor at least since the 1970s, when Vietnamese refugees began moving into the area to take advantage of the region's fishing resources. Some refugee migration to the Gulf Coast was secondary within the United States, after refugee service bureaus settled some of the 600,000 Vietnamese and other southeast Asian refugees in Iowa, Minnesota, and other inland locations, largely because of employment opportunities in meatpacking (Ha 2012). A decade after welcoming refugees from Vietnam, the United States also passed the 1986 Immigration Reform and Control Act (IRCA), which offered work authorization to millions of undocumented immigrants living in the United States and expanded temporary work visas, offering legal, seasonal work to people from Mexico, Central America, the Caribbean and other parts of the world to work in seafood processing as so-called guestworkers (Griffith 2006).

These two developments—the influx of refugees and new guestworkers—altered the ethnic composition of the Gulf of Mexico shrimp industry in ways that began in the 1970s and continue today (Nance, et al. 1991; Ha 2012). Ha reports that, after the 1980s, the Vietnamese populations in two coastal communities of Texas—Seadrift and Palacios—increased from practically zero to 10% and 12%, respectively, of the two towns' populations; nearly all of these families were engaged in shrimping and shrimp processing, either directly or through network ties to shrimping families and merchants. Current estimates of the proportion of Vietnamese shrimpers range from around 20% to 40% of the fleet (Bennet 2003; Ha 2012;

Patel, et al. 2018). In their work on the Deepwater Horizon oil spill, Patel, et al. (2018) note that significant numbers of Vietnamese families suffered due to the spill's impact on shrimp and other crustaceans and shrinking markets for Gulf seafood that consumers perceived as contaminated. Specifically, nearly 60% of the Gulf coast Vietnamese community lost income due to the spill, 27% lost employment, and 12% could no longer pay all their bills. Patel, et al.'s findings contrast with Liese's (2023) findings that payments from the spill benefitted some Gulf of Mexico shrimpers. This may suggest that there were significant differences in the demographic composition of the people who participated in the payments program vs. those who did not. Unfortunately, this remains an empirical question in the absence of accurate data to investigate it.

As noted earlier, Mexicans and other Latinos make up the bulk of the packing-shipping-processing sector for shrimp and other seafood, some of them carrying the H-2B visas that were developed under IRCA. Data from the U.S. Department of Labor on foreign labor certifications tracks numbers of H-2B visas in the United States, which are capped annually at around 66,000. Although seafood processing and shrimp vessels were among the first to use the H-2B program, they have received proportionately fewer of the visas over the years. In 2023, of 1,044,116 applications submitted to the U.S. Department of Labor for H-2B visas, only 165 were for seafood workers, deckhands, or related fields. Part of this was due to the implementation of a lottery system for H-2 visas, but it is more likely that seafood processors kept hiring former H-2B workers whose visas had expired yet who had connections to fish houses.

In short, Vietnamese and Latinos make up significant portions of the Gulf shrimping industry, with many of Vietnamese well-integrated into Gulf Coast coastal communities and many of the former H-2B workers now able to secure employment in seafood processing through ties to their employers. Researchers studying temporary visa programs have noted that workers with H-class visas have enough documentation to obtain bank accounts, drivers licenses, social security numbers and cards, and other documents that are sufficient to evade deportation. Often, then, former H-2B workers continue working at their plants without their visas, already having satisfied I-9 requirements with their employers. In any case, most seafood dealers and processors in the Gulf of Mexico hire Latino workers.

H-2B workers have sound incentives to alter the terms of their employment in that, legally, they are contracted to work with one and only one employer. This significantly restricts their access to the wider labor market while increasing their employer's control over their working and living conditions and much of their time and movement. Employers tend to provide housing for H-2B workers, which often isolates them in remote labor camps and makes them doubly dependent on employers for their access to food, shopping, church, and other activities outside of work. Investigations around the United States have uncovered multiple cases of H-2B employers holding workers in indentured servitude or human trafficking-like conditions as well as committing wage theft (Southern Poverty Law Center 2013). Under these conditions, it is not surprising that some H-2B workers leave their primary places of work once they learn they can access additional documents with their visas.

With the current tight labor market, however, labor is certain to remain a constraint on shrimping and shrimp processing in the near future. Further, although tensions between Vietnamese and white shrimpers have died down since the infamous KKK rally against Vietnamese in Seadrift, Texas in 1979, recent and continuing anti-immigrant and nationalist/ nativist opposition to foreign workers continue to exert pressures on those hiring immigrant workers, including Latinos, particularly in states like Florida and Texas with vocal anti-immigrant governors and legislatures. These sentiments may have a negative impact on the fleet. They may also lead to employers of H-2B workers isolating them even more than they already do under the terms of their contracts.

The other side of the labor supply coin is what may occur with economic downturns in non-fishing sectors where commercial shrimpers and shrimp processors work during slow or closed fishing seasons.

Research on seasonal, low-wage workers has shown that workers in precarious economic conditions will often combine several livelihoods to survive and that these livelihood constellations provide multiple forms of income and other benefits, such as network ties to economic opportunity (Griffith 2022). Under these conditions, many workers tend not to burn their bridges, but remain attached to economic pursuits like commercial fishing or agriculture even after they have left these economic sectors for much of the year or for several years. Someone who has left commercial fishing for seasonal or permanent employment in the fossil fuel industry, working on an oil rig, for example, may return to commercial fishing as the fossil fuel industry experiences contraction with the pursuit of cleaner energy sources. Some evidence of this occurring in the Gulf of Mexico comes from Nance, et al. (1991), who reported that participation in inshore shrimping rose as employment in the petrochemical sector of Louisiana declined. Again, this may be an area to pursue for future research, in that a downturn in, say, construction, fossil fuels, or tourism, where shrimpers and shrimp processors often work during the off season, may lead to an influx of labor back into commercial fishing and shrimping.

Finally, Ha's dissertation on the Vietnamese in Texas shrimping and nail salon industries contains some interesting observations concerning the marketing of shrimp by Vietnamese shrimpers as well as the character of Vietnamese networks that, in both shrimping and nail salons, enable them to access employment through co-ethnic ties. Regarding shrimp marketing, Ha notes that, "Vietnamese shrimpers are able to sell the majority of their catch while their white counterparts threw back or discarded their by-catch… In this context, although most of the shrimp catch gets sold to a diverse market, the demand by co-ethnics for by-catch made co-ethnic consumers more important for shrimpers than for nail salon workers" (2012: 34). As defined under Magnuson, if the catch is retained for personal use or sold, it becomes incidental catch rather than by-catch. Moreover, non-shrimp species that are allowed to be harvested/landed using shrimp gear varies by state. Ha also notes that shrimp incidental catch often falls into the category of "exotic goods," which influences its value within the Vietnamese community—again one that is accessible through network ties, many reaching into the urban neighborhoods of Houston.

From these observations, it is conceivable that Vietnamese shrimpers conform to the "kinship systems" that Doerigner, et al. (1986) found in the New England fishing economy. They differentiate these systems from capitalist systems as follows: "The family-owned Portuguese and Italian fleets follow vastly different employment rules in staffing their boats than do boats in the processing sector…. Kinship employment systems not only grant family members priority access to job opportunities, they also involve a commitment to provide work for relatives, even in times of substantial declines in catch" (1986:76-77). Combined with the ways that the "exotic" designation may influence the value of by-catch, the role of kinship and co-ethnic ties in the Vietnamese fleet suggests that, as a group, Vietnamese shrimpers operate according to different economic principles than others in the Gulf—principles that make it more difficult to understand and predict how they may respond to regulations, declines in catches and prices, or the management of by-catch.

Some conclusions regarding social and economic constraints on shrimping

Several social and economic factors constrain shrimping in the Gulf of Mexico in ways that make it unlikely that the industry will catch significantly more shrimp than the 80,000,000 to 100,000,000 pounds landed over the past few decades. Short of significantly curbing imports or successful campaigns that convince seafood consumers that domestic, wild-caught shrimp are superior enough to imports to command significantly higher prices, dockside values will remain low relative to fuel, rents, labor, and other costs, threatening profitability. Further, continued threats to shrimp trawling by recreational fishing interests concerned, legitimately or not, about shrimp bycatch will also act as a drag on income from shrimping and industry viability.

This may reduce shrimp to a part-time activity more suited to smaller than larger vessels and undertaken by people who have more than one source of income, including shrimpers who target shrimp during the summer months, when shrimp are larger and prices and higher, and fish for other species at other times of the year. While this is a possibility, we noted earlier that the larger, vertically integrated fleets have managed to remain in business through value-adding in processing and marketing—sectors where smaller vessels tend to have a smaller economic footprint.

Even though shrimping part-time may not be an option for larger vessels, which tend to be specialized and can spend up to three weeks at sea at a time, by 2014, smaller vessels comprised up to 75% of the fleet, up from around 66% in 2009 (GMFMC 2017). Collectively, however, larger vessels continue landing a larger proportion of the total catch. Yet pressures facing the industry may continue to stimulate innovative marketing strategies on the part of shrimp vessel owner-operators, whether large or small, such as marketing directly to the public from one's boat or engaging in value-adding strategies such selling cooked shrimp from dockside food stands. Around 40% of the smaller, inshore shrimp vessels claimed to have sold shrimp directly to the public, although most small and large vessels continue to sell to dealers and processors. Selling directly to the public seems to be more common when shrimpers believe that dealers are not giving them a fair price, particularly for the higher-value large shrimp that consumers appreciate and that, at times, command premium prices. Data from direct sales to consumers may not be included in current industry price data, especially if shrimpers are selling to the public without a dealer's license.

While highly vertically integrated firms with multiple vessels tied to seafood dealers may be able to operate on low profit margins, owner-operators of large vessels with high fuel and maintenance costs for targeting offshore shrimp resources will continue to face difficulty making ends meet. Already, many shrimpers have been able to remain in business because they received income from sources such as the Deepwater Horizon Spill; given that this was a one-time payment, such income cannot be counted on in the future. However, many of the immigrants and refugees in the industry depend on constellations of livelihoods, enabling their participation in the industry under different economic considerations or with more flexibility than someone heavily dependent on shrimping as their sole livelihood.

Nevertheless, while shrimping may not survive as the highly profitable and fulfilling way of life it was in the past, Gulf of Mexico residents will continue to harvest and land brown, white, and pink shrimp as long as the resource is available, permits are issued and affordable, and trawling survives political calls for net bans. Environmental changes—the destruction of wetlands, coastal development, rising ocean temperatures, harmful algal blooms, pollution events, etc.—may threaten the annual shrimp crop, but shrimping will continue. As long as the current social, economic, and political constraints keep it in check, it is likely, too, to remain sustainable.

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