



# Assessment of Critical Transportation and Marketing Roadblocks and Opportunities for Gulf Coast Shellfish Aquaculture (Summary)

Delmy L. Salin

This is a summary of “Assessment of Critical Transportation and Marketing Roadblocks and Opportunities for Gulf Coast Shellfish Aquaculture Summary” by Daniel R. Petrolia, Adam Nathan, Beth Walton, and William C. Walton.<sup>1</sup> This research and analysis received funding from USDA’s Agricultural Marketing Service (AMS) through cooperative agreement number 21-TMTSD-MS-0005. The opinions and conclusions expressed are the authors’ and do not necessarily reflect the views of USDA or the Agricultural Marketing Service. The full report is available online at <https://www.agecon.msstate.edu/pdf/Assessment-of-critical-transportation-and-marketing-roadblocks-and-opportunities-for-gulf-coast-shellfish-aquaculture.pdf>.

## WHAT IS THE ISSUE?

The Covid-19 pandemic posed challenges to oyster farmers trying to navigate a glut of product entering the marketplace against numerous market and restaurant closures. By mid-March of 2020, most restaurants were closed to in-house dining and the loss of the restaurant market meant that seafood producers had to identify alternative pathways to moving shellfish to consumers. Furthermore, smaller oyster farms have been challenged recently in regard to their economic sustainability. Recent work suggests smaller farms are not profitable, and that due to consolidation in the market, over time, the number of farms declines as average farm size increases.

Given these questions about the viability of small farms, which currently dominate the US oyster aquaculture industry, determining if there are different transportation and marketing strategies to provide economically viable pathways for these farms is critical. Although some work has studied transportation and marketing challenges facing shellfish aquaculture, none is specific to the Gulf Coast region. Oyster farming is relatively new to the Gulf Coast compared to other established regions, such as New England. As a result, marketing strategies for this region have not been fully developed, meaning this region’s growers face challenges in identifying market opportunities.

---

<sup>1</sup> Daniel R. Petrolia is a professor at Mississippi State University (MSU), Adam Nathan is a master’s student at MSU, Beth Walton is Executive Director at Oyster South, and William C. Walton is Acuff Professor of Marine Science and Shellfish Aquaculture Program Coordinator at Virginia Institute of Marine Science, College of William & Mary.

It is estimated that a majority of these farms are owner-operated, small business farms, producing a million or fewer oysters per year. Unlike wild-caught oysters, farmed oysters go almost exclusively to the high-value, live half-shell market. As such, the seafood sector is enmeshed with restaurant sales. Restaurant closures during the Covid-19 pandemic exposed how vulnerable such farms are, given that over 68 percent of seafood spending is at restaurants, with the half-shell oyster market likely substantially higher. The seafood industry faced the loss of restaurant sales, challenges integrating into emergency food operations, lower prices for seafood, and disruptions of markets, all of which caused revenue to decline.

As exemplified in the response to COVID-19, one aspect of local foods relevant to oyster farms is direct marketing by farmers to local restaurants and other local buyers. Local and regional markets are sometimes perceived as providing an opportunity for beginning small-scale farmers who cannot yet take advantage of economies of scale and have higher production costs. Local food markets often have low barriers to entry, and consumers are often willing to pay premium prices. Many small producers selling through local and regional markets have diverse sales strategies and revenue streams (e.g. CSA, farmers markets, food hubs, agritourism, and value-added products) and are better able to respond to market shifts than producers that rely heavily on either wholesale or pick-your-own models. These multifaceted business models can provide stability and increased revenue, contributing to a more holistic and sustainable business approach for small producers.

This study helps identify key transportation and marketing roadblocks for oyster farmers along the Gulf Coast using data collected from similar research efforts and analyzing grower, distributor, and buyer experiences to better understand where efficiencies can be made to reduce transportation costs and increase market opportunities for Gulf Coast oysters. Particular attention is put on identifying challenges and opportunities for socially disadvantaged producers.

## HOW WAS THE STUDY CONDUCTED?

The study consisted of three main components. The first component consisted of a literature search focused on off-bottom oyster production and marketing to identify challenges and opportunities facing off-bottom oyster farmers in the U.S. Gulf Coast. The second component consisted of a quantitative analysis using Monte Carlo simulation to compare the feasibility, market demand and supply, and profitability of the two primary marketing strategies available to off-bottom oyster farmers: direct-sale by farmers into local markets and farmgate sales to a wholesaler/distributor. Key factors included transportation distance from farm to buyer (up to 100 miles one-way), local market size, number and size of competing farms, and direct-sale and wholesale prices. The third component consisted of outreach efforts led by a partner organization Oyster South—a charitable organization promoting oyster farming and consumption across the southern United States—to disseminate marketing and other relevant information to off-bottom farmers. There were three main goals of the outreach efforts:

- Promote southeastern U.S. oyster aquaculture through social media, digital newsletters, and other means with assessment of engagement with at least monthly efforts throughout the project duration.
- Provide outreach to producers and other stakeholders about marketing, transportation challenges and opportunities, with preparation of materials for presentation to various audiences.
- Organize and host workshops for oyster farmers in Alabama, Florida, Louisiana, Mississippi, and Texas, where information about the project could be shared.

## WHAT DID THE STUDY FIND?

For the first component of the study, the authors' literature review discovered a dearth of knowledge and data regarding both production and demographic makeup of the oyster farming sector. However, for the second component, the authors' simulation model resulted in the following key findings:

- **Transportation distance was not a significant roadblock for oyster farmers along the U.S. Gulf coast.** Although distance to market for direct-sale, which varied from 5 to 100 miles, affected profit, it did not affect the overall performance of direct-sale relative to selling to a wholesaler.

- **Direct-sale is better for small clusters of small farms than for large farms/groups of farms.** The marketing analysis found that, because direct-sale requires more effort by the farmer to market oysters than selling to a wholesaler, costs are higher for that strategy. The analysis also found that, at small farm sizes, the average price per oyster received under the direct-sale strategy (more than \$0.80) far exceeds wholesale price (\$0.50). Thus, the direct-sale strategy can deliver higher prices when the number of farms and farm sizes are small.
- **Direct-sale ultimately leads to lower prices for large farms/groups.** As farm size increases, the average price under direct-sale declines to less than \$0.50 per oyster—that is, less than what would be received in the wholesale market. As farm numbers and sizes increase, however, the local market cannot absorb all oysters. In those cases, farmers are forced to sell an increasing share to the lower-value sack-oyster market, and that marketing strategy eventually lowers the average price received to below that of the wholesale market.
- **Wholesale marketing provides a transportation advantage for large farms/groups.** For large-scale farming, wholesale marketing is better, despite being associated with lower prices to the farmer. The wholesaler can transport product to more and more-distant markets via truck or air, relative to direct-sale. The direct-sale strategy—despite being associated with higher prices to the farmer—is limited by the volume of sales that it can accommodate, which ultimately leads to excess supply that is likely to end up selling in an even lower-valued market.
- **Direct-sale is not profitable for any size of farm.** Although the direct-sale strategy is better for small farms than large ones, it is not profitable, on average, for any size of the farm analyzed. Profits only diminish further as farm numbers and size increase. This result is due to a “squeeze” effect: at small farm sizes, higher prices are possible, but the inability to capitalize on economies of scale render the farm unprofitable. As farm size increases, economies of scale are possible, but market conditions put downward pressure on prices. The only profitable solution is to be able to scale up and survive at lower prices.
- **Wholesale is profitable for only the two largest farm sizes.** We find that the wholesale strategy is not profitable, on average, at the four smallest farm sizes, but profitable, on average, at the two largest farm sizes. Thus, the larger farm sizes allow for sufficient economies of scale such that profitability is possible at a \$0.50 farmgate price from the wholesaler.

In summary, the authors conclude that key marketing challenges for off-bottom farmers include scaling up operations to a profitable farm size and establishing a marketing strategy that results in sufficient numbers of buyers willing to pay profitable prices. The quantitative analysis found that a marketing strategy focused on selling product at the farmgate to a wholesaler is likely to provide the greatest opportunity to be profitable relative to a strategy focused on selling directly into local markets. This result is due primarily to the inability of the local market to absorb all locally grown oysters. This result holds across a range of farm sizes, prices, growing conditions, transportation distances, number and size of competing farms, and number and demand of local buyers.

Finally, for the third component, the authors’ outreach efforts to disseminate information regarding southeastern U.S. oyster aquaculture demonstrated success in multiple areas. During 2022, Oyster South produced and distributed two stories a month promoting southeastern U.S. oyster aquaculture on its website as well as social media. This effort led to a massive increase in visits, unique visitors, and page views from the prior year. In 2021, there were 10,402 visits, 8,096 unique visitors, and 20,749 page views. In 2022, those numbers increased to 18,777 visits, 14,539 unique visitors, and 35,075 page views. Additionally, a workshop was held in conjunction with the 2022 Oyster South Symposium, which included a moderated discussion about hurdles and opportunities for oyster farmers in the region. The workshop was attended by over 45 individuals, representing growers, distributors, and chefs from all five Gulf States and beyond. This workshop formed the basis for follow-up conversations during a focus group at the 2023 Oyster South Symposium. The authors also organized marketing-focused outreach talks at the 2024 Oyster South Symposium. Finally, the authors developed and contributed production and marketing-focused lectures to the University of Florida’s Gulf Coast Grown Online Oyster Course.

## **DISCUSSION AND LIMITATIONS**

The study underlines the critical transportation and marketing challenges within the Gulf Coast shellfish aquaculture, focusing particularly on oyster farms. The study's findings suggest that growth and consolidation are the most viable path to increasing profitability and business sustainability for off-bottom oyster farmers. However, there are several limitations that should be considered.

While the study acknowledges that direct-sales can lead to higher unit revenue for farmers when the product and producer size is small (limited supply), the findings discount it as an unviable marketing strategy due to the growing production of oysters in the region. By limiting its analysis of local food market channels to direct-sale by farmers into local markets, the study does not offer opportunities to assess approaches that could improve the market conditions or supply chain issues undermining profitability. For instance, the food hub model, which serves as a small, local, centralized processing and distribution hub, can help multiple small producers realize economies of scale through centralizing marketing, packaging, distribution and other activities. By aggregating and centralizing the production from multiple small producers, intermediaries like food hubs could also provide a mixed model of sale, enabling further price discrimination by selling at higher prices to low volume consumers, and discounting for higher volume buyers like local restaurants, and then packaging and selling excess supply to wholesalers.

While the study examines direct-to-consumer sales as a potentially more profitable avenue for small to medium-sized producers compared to wholesale, it found that direct markets do not consistently yield profitability across all farm sizes. This perspective overlooks the possibility that small- and medium-sized producers often engage in additional revenue streams and marketing channels. These producers frequently explore diverse revenue streams such as agritourism, value added products, educational programs, and specialized events. By effectively utilizing diverse local marketing channels, shellfish producers can potentially overcome some of the profitability challenges suggested in the study, making direct markets a viable and profitable option for various farm sizes.

Multifaceted business models not only diversify revenue streams but also help increase resilience to market/supply chain challenges, build brand identity and customer loyalty, and foster direct relationships with end consumers. This can lead to increased flexibility and higher margins than those available through traditional wholesale channels, where producers have less control over market pricing and consumer engagement. An example of the importance of adapting to market changes is when, during the COVID-19 pandemic, oyster farmers had to rethink how they conducted business due to widespread restaurant closures. Seafood producers pivoted their operations by relying on relationships at the local level and selling through local and direct distribution models such as dock-side pickups and establishing [U-Pick opportunities at oyster farms](#).

## **PREFERRED CITATION**

Salin, Delmy L. October 2024. *Assessment of Critical Transportation and Marketing Roadblocks and Opportunities for Gulf Coast Shellfish Aquaculture (Summary)*. U.S. Department of Agriculture, Agricultural Marketing Service. Web. <<http://dx.doi.org/10.9752/TS435.10-2024>>

Tractor wheel icon: ID 33434254 © Tribalum | Dreamstime.com

Photo credit: Adobe Stock

USDA is an equal opportunity provider, employer, and lender.