

2020

IMPACTS OF COVID-19 *on the* FLORIDA SHELLFISH AQUACULTURE INDUSTRY



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**ECONOMIC IMPACT
ANALYSIS PROGRAM**

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INTRODUCTION

Public health measures enacted to mitigate the spread of the 2019 novel coronavirus disease (COVID-19) resulted in production slowdowns and business closures across many sectors of the economy. As a result, sales revenues for many industry sectors have experienced sharp declines, shellfish aquaculture included. As is the case with most disasters, it is critical to provide credible estimates of the losses experienced by different industries to inform decision-making related to disaster relief and recovery. While the COVID-19 situation and data limitations within the aquaculture industry present a suite of different challenges, the Economic Impact Analysis Program within the University of Florida's Institute

of Food and Agricultural Sciences (UF/IFAS) worked with UF/IFAS Shellfish Aquaculture Extension and the Division of Aquaculture within the Florida Department of Agriculture and Consumer Services (FDACS) to collect data and modify tools and methods to estimate sales revenue changes within Florida's shellfish aquaculture industry resulting from the COVID-19 pandemic. This analysis estimates that the Florida shellfish aquaculture industry lost approximately \$1.85 million in sales revenue from March to mid-May of 2020 due to the COVID-19 pandemic. This document overviews the data, methods, and results of the analysis of losses.

SHELLFISH AQUACULTURE IN FLORIDA

Shellfish aquaculture is the largest food-use aquaculture industry in Florida. The United States Department of Agriculture estimated that Florida's shellfish aquaculture sales totaled \$15.5 million in 2018, accounting for approximately 22% of all Florida aquaculture sales (USDA, 2019). The Eastern oyster (*Crassostrea virginica*) and hard clam (*Mercenaria mercenaria*) are the two primary shellfish species produced. Data from 2016 – 2019 suggest that aquaculturists throughout the State of Florida produce an average of 3.5 million oysters and 94.0 million clams each year (Table 1). Production occurs across a total of 720 shellfish leases (average lease size is just under 2 acres) in 16 coastal counties (Figure 1). Most leases are found along the Florida panhandle and the region known as the "Big Bend", specifically in Levy, Franklin, Wakulla, and Dixie counties.

These four counties alone account for approximately 85% of total Florida shellfish leases.

Table 1. Shellfish production data, 2016 – 2019

Year	Oyster production (pieces)	Clam production (pieces)
2016	2,984,870	87,252,068
2017	2,322,089	92,548,963
2018	4,049,728	97,794,033
2019	4,542,600	98,227,109
Avg. 2016-2019	3,474,822	93,955,543

Source: Data obtained from FDACS, Division of Aquaculture (C. Culpepper and M. Cockrell, personal communication, June/July/August, 2020)

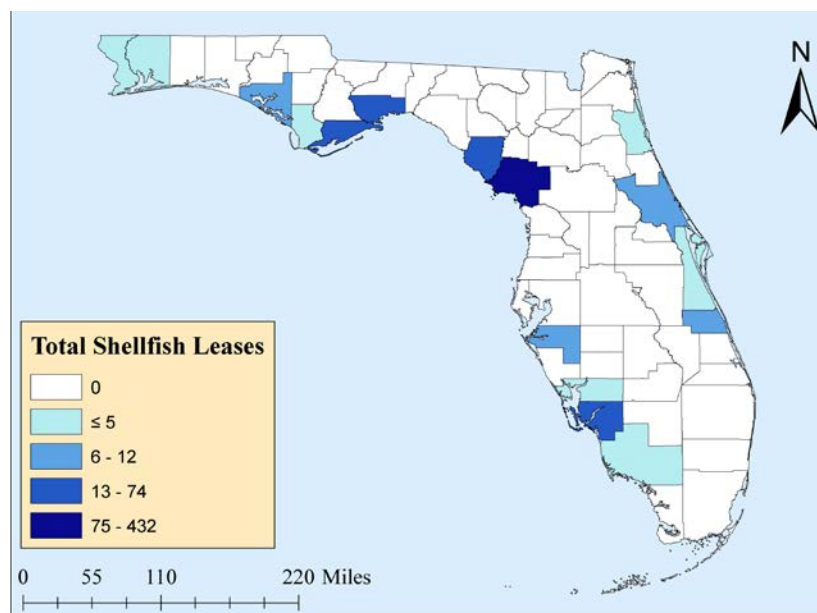


Figure 1. Total number of shellfish leases by county in 2019.
Source: Data obtained from FDACS, Division of Aquaculture (C. Culpepper and M. Cockrell, personal communication, June/July, 2020)



COVID-19 IMPACTS ON FLORIDA SHELLFISH AQUACULTURE

The Economic Impact Analysis Program and several affiliated colleagues within the Food and Resource Economics Department at UF designed an online survey tool to collect and process data on the impacts of the COVID-19 situation on agriculture and marine operations in the state of Florida. Respondents were recruited through the use of media releases and postings on social media by UF/IFAS Communications as well as distributions via email listservs of agencies and associations including FDACS, Florida Farm Bureau, and UF/IFAS Shellfish Aquaculture, among others. Data collected included enough responses from producers in the shellfish aquaculture industry (13) to produce reliable and economically meaningful (statistically significantly different than zero) estimates of the value of sales revenue changes for this industry in the March to mid-May period. These results indicated significant revenue losses for shellfish aquaculture producers. On average, respondents reported a 75% decline in product sold as compared to the previous year and summary statistics indicated a 90% confidence interval on this estimate that ranged from 60% decline to 90% decline.

To estimate the value of these reported sales revenue declines within Florida's shellfish aquaculture industry, analysts needed to know what proportion of annual sales

revenues typically occur within the March to Mid-May time frame. However, due to data limitations within the shellfish aquaculture industry, and indeed the larger aquaculture industry, there is not a reliable source of information on monthly sales revenues (Lipton et al. 2019). Monthly production data for the period 2016-2019, provided by the FDACS Division of Aquaculture, were used as a proxy for monthly sales revenue patterns and indicate that on average 20% of oysters and 20% of clams are produced in the March to Mid-May time period of interest¹. Multiplying these percentages by average annual production values for 2016-2019 yielded an estimate of expected production for March to mid-May 2020 of over 680,000 oysters and over 19 million clams. Discussions between UF/IFAS Shellfish Extension and members of the aquaculture and seafood dealer industries yielded an estimated average farm-gate price per piece (price to grower) for aquacultured product for this time period of \$0.53/piece for oysters and \$0.11/piece for clams (L. Sturmer, personal communication, June, 2020). The estimates for production and prices for each product were multiplied and then summed to estimate the expected revenue for total shellfish aquaculture production between March and mid-May for 2020, \$2.46 million.

Table 2. Expected shellfish production and revenue for March to mid-May 2020

	Expected production (pieces)	Average price (dollars per piece)	Expected revenue (Dollars)
Oysters	681,561	\$0.53	\$361,227
Clams	19,101,604	\$0.11	\$2,101,176
Total			\$2,462,404

Source: Authors' calculations using data obtained from FDACS, Division of Aquaculture and personal communications with seafood wholesale dealers.

¹We assume the production is evenly distributed among the month of May, using only half of the total production values for this month.

The expected revenue for the March – mid-May period of 2020 was then combined with the information on reported sales changes from the UF/IFAS Economic Impact Analysis Program survey to estimate the value of sales revenue decline reported. Sales revenue losses in the Florida shellfish aquaculture industry from March to mid-May, specifically

resulting from the COVID-19 pandemic, were estimated to be \$1.85 million (75% average losses), with a 90% confidence interval around the estimate ranging from \$1.48 million (60% losses) to \$2.22 million (90% losses). Table 3 provides a breakdown of the estimated revenue losses for shellfish aquaculture in Florida.

Table 3. Estimated revenue losses for shellfish aquaculture due to COVID-19 (March to Mid-May 2020)

	Average expected production (March – Mid-May) (Million \$)	Estimated Revenue Losses		
		60% Losses (Million \$)	75% Losses (Million \$)	90% Losses (Million \$)
Oysters	\$0.36	-\$0.22	-\$0.27	-\$0.33
Clams	\$2.10	-\$1.26	-\$1.58	-\$1.89
Total	\$2.46	-\$1.48	-\$1.85	-\$2.22

CONCLUSIONS

The data presented provides key evidence that the shellfish aquaculture industry in Florida has and continues to be significantly impacted by the COVID-19 pandemic. These impacts stem in part from the fact that oyster and clam consumption within U.S. restaurants and bars has traditionally accounted for the majority of demand for products of the Florida shellfish aquaculture industry. Consumer demand for seafood, including oysters and clams, has been negatively impacted by closures or limited offerings at restaurants, social distancing practices, and decreases in consumer income. However, several programs and events in Florida aim to combat this decrease in demand and provide a unique opportunity that allow foodservice establishments to be positioned for success.

FDACS created the “Florida Farm to You” program to connect Florida producers with available product to consumers and businesses looking to purchase Florida products (<https://flfarmtoyou.fdacs.gov/consumers.aspx>). Several shellfish aquaculture operations have volunteered to have their business included in this database. The FDACS Division of Aquaculture also provided information for producers related to selling products directly to consumers and via other outlets that they might not have utilized prior to the COVID-19 pandemic. (<https://www.fdacs.gov/content/download/91792/file/FDACS-P-02167RetailSalesofAquaculturedShellfish.pdf>). UF/IFAS Shellfish Extension has compiled

a list of COVID-19 related resources for shellfish growers and has hosted industry specific webinars on online selling, direct marketing, and eligibility for various disaster relief programs (<http://shellfish.ifas.ufl.edu/news/covid-19-resources-for-shellfish-growers/>). UF/IFAS Shellfish Extension also partnered with the Cedar Key Aquaculture Association and several seafood wholesalers in Cedar Key, FL, to host a drive-through clam giveaway on Memorial Day. Each family/vehicle received a 75-count bag of Cedar Key clams along with recipes and safe-handling information. Finally, “Seafood at your Fingertips”, a new series of seafood-centric cooking demonstration videos created by Florida Sea Grant, has featured step-by-step guidance from Florida Sea Grant agents on preparing several shellfish dishes, including oysters on the half-shell and cookout clams (<https://www.flseagrant.org/seafood/seafoodatyourfingertips/>). Each of these programs or events were designed to increase awareness of aquaculture production in Florida and make home-cooked seafood more accessible to the general public.

Continued depressed sales, along with constant or potentially increasing costs of production, and any future changes in price will all impact producer profitability as the pandemic situation continues to unfold. This analysis will be repeated to analyze the effects of this situation on shellfish aquaculture in Florida beyond mid-May.

REFERENCES

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On the cover: *Harvesting bags of mature clams (top circle), Raw oysters on ice (bottom circle), Processing clams (middle circle). Photos by UF/IFAS Communications.*