

Economic Impact Estimates for Sub-Tidal, Floating Cage Oyster Aquaculture Leases in Georgia.

Data Sources:

- Georgia DNR-CRD's Commercial Fishing Statistics Data 2014-2018
- UGA MAREX-GA Sea Grant Oyster Enterprise Budget Model 2020

About the Model:

The economic impact estimates are derived from the above data sources used to customize an IMPLAN v3. input-output (I-O) model. IMPLAN models contain 546 sectors representing all private industries in the United States (as defined by the North American Industry Classification System ([NAICS codes](#)). The model is based on the 2017 Georgia state data package we purchased from IMPLAN in 2019. Employment, employee compensation, industry expenditures, commodity demands, and relationships between industries are captured in this data set. We use information we know about the GA commercial fishing sector (DNR-CRD's), and usually industry surveys (lacking) to customize the commercial fishing sector and estimate the economic impact of the whole sector or its parts.

In this model, we are incorporating estimates from the Oyster Enterprise Budget Model 2020 to model "what-ifs" with respect to new entrants into the Oyster Aquaculture Lease industry in Georgia. We are attempting to measure the possible economic impacts commercial fishing would have IF there were a given number of Oyster Aquaculture Leases performing at a certain level.

Assumptions:

- Model is based on the 2018 Commercial Fishing Impact Model I created previously. It establishes our sector as normally is. It wasn't the best year of the 5 year data I have, but it might highlight the importance of an industry that needs diversification.
- Oyster Aquaculture Leases are:
 - 10 acres
 - 1,000 cages
 - 853,333 Seeds planted
 - 640,000 Target Oyster Sales
 - \$0.53 Unit Oyster Price
 - 25% Mortality
- Essentially farms are in their 5th year of production. The first 3 years businesses will be striving for break-even, turning a profit possibly in the 4th, and hopefully be established with experience to move the volume of oysters needed to generate real revenue by their 5th year. Capital expenditures towards gear will eat up revenue during the initial years and those expenditure effect's will most likely not be local.

Impact Estimates:

		Economic Impact Estimates			
		Number of Jobs	Labor Income	Value Added	Output/Sale
Number of Leases	Direct Effect				
	5	28.1	\$1,080,374	\$1,766,037	\$1,763,639
	10	57.7	\$3,343,887	\$3,548,445	\$3,527,278
	15	86.6	\$5,015,829	\$5,322,668	\$5,290,917
	25	144.3	\$8,359,712	\$8,871,113	\$8,818,194
	50	297.6	\$17,233,242	\$18,285,534	\$18,176,390
Number of Leases	Indirect Effect				
	5	0	\$2,701	\$3,818	\$7,203
	10	0	\$752	\$1,063	\$2,006
	15	0	\$1,128	\$1,595	\$3,009
	25	0	\$1,880	\$2,658	\$5,015
	50	0.1	\$3,878	\$5,483	\$10,343
Number of Leases	Induced Effect				
	5	6.8	\$305,791	\$567,067	\$962,041
	10	20.8	\$936,253	\$1,736,474	\$2,944,703
	15	31.2	\$1,404,368	\$2,604,688	\$4,417,012
	25	52	\$2,340,576	\$4,341,075	\$7,361,562
	50	107.2	\$4,824,778	\$8,948,527	\$15,174,827
Number of Leases	Total Effect				
	5	34.9	\$1,388,866	\$2,336,922	\$2,732,883
	10	78.5	\$4,280,892	\$5,285,983	\$6,473,986
	15	117.8	\$6,421,325	\$7,928,951	\$9,710,938
	25	196.4	\$10,702,169	\$13,214,846	\$16,184,771
	50	404.8	\$22,061,899	\$27,239,544	\$33,361,560

Definitions of Economic impact types:

- **Output:** Gross sales by a business within the economic region (State of Georgia) effected by an activity (commercial fishing)
- **Labor Income:** employee compensation (wages & salaries) and proprietor income (income from self-employment)
- **Employment:** Full time and part-time jobs supported directly or indirectly by the sales of seafood or purchases of inputs to commercial fishing
- **Value Added:** the contribution made to the gross domestic product (GA) in a region.

Definitions of Economic impact types:

Direct Effects

Direct effects are the set of expenditures applied to the I-O multipliers for an impact analysis. Here it is the production changes in commercial fishing from additional lease sites producing oysters. The production changes applied to the multipliers in IMPLAN will then display how the region will respond economically to them.

Indirect Effects

Indirect effects are the business to business purchases in the supply chain taking place in the region that stem from the initial industry input purchases. As the commercial fishing sector spends additional money in the region with their suppliers, this spending is shown through the indirect effect.

Induced Effects

Induced effects are the values derived from additional household spending of Labor Income. The induced effects are generated when the employees within the business' supply chain spend their wages on normal consumer products (gas, groceries, bills, other commodities etc.)

- Note these categories are NOT ADDITIVE amongst each other. Doing so would result in double counting.
- We usually focus on the Total Effects of **Output**, **Labor Income** and **Employment** in reporting these figures to the public. Explain Value Added is in terms of the GDP and the difference between that and "mark-up value added" is often confusing and difficult to communicate to the public.

Caveats

- These impacts include the contributions made from Harvesters only, oyster lease production are essentially considered the same as "landings" would be in normal fisheries. We simply add aquaculture oysters in with all commercial fishing landings.
- Usually we pair these models' output with that of a similar model constructed from survey data of dealers and wholesalers. We also use NOAA impact estimates to supplement estimates further down the supply chain like retailers. We cannot do this with this model 1. because we still lack the survey data 2. changes like this will result in significant changes down the supply chain and we lack the information to estimate those changes.
- Obviously, this is a very large what-if analysis. We are using estimates to estimate estimates. The original commercial fishing model was lacking survey data to really customize the sector outside of participant counts and production value. Second the Oyster Enterprise Budget Model 2020 is set to average values, prices, costs and other

parameters-based condition tested by the Shellfish laboratory and reports by other state's management and extension programs. No actual production data from Georgia for oyster leases has been incorporated.